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AMERICAN ALPINE JOURNAL

1958

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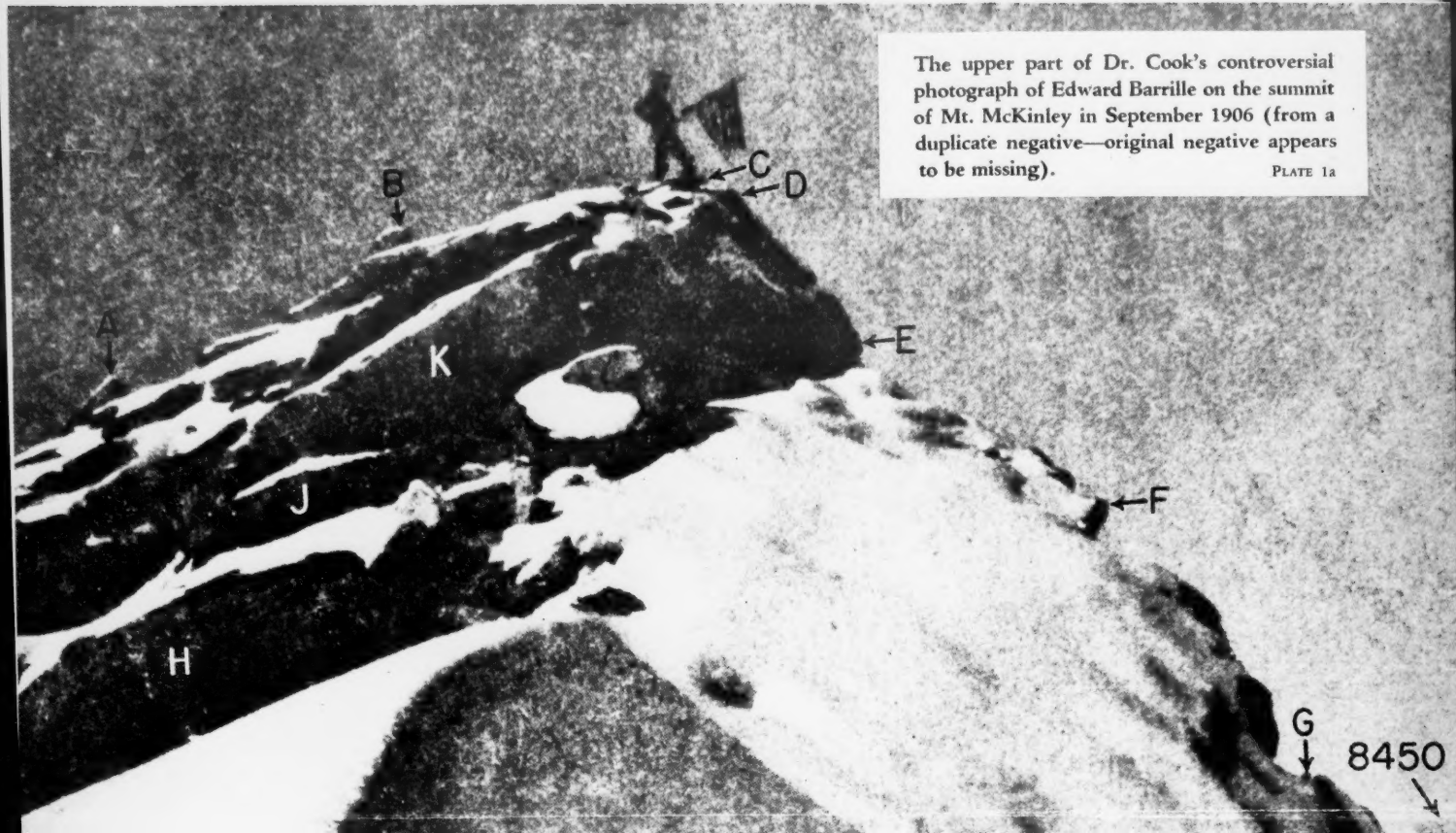
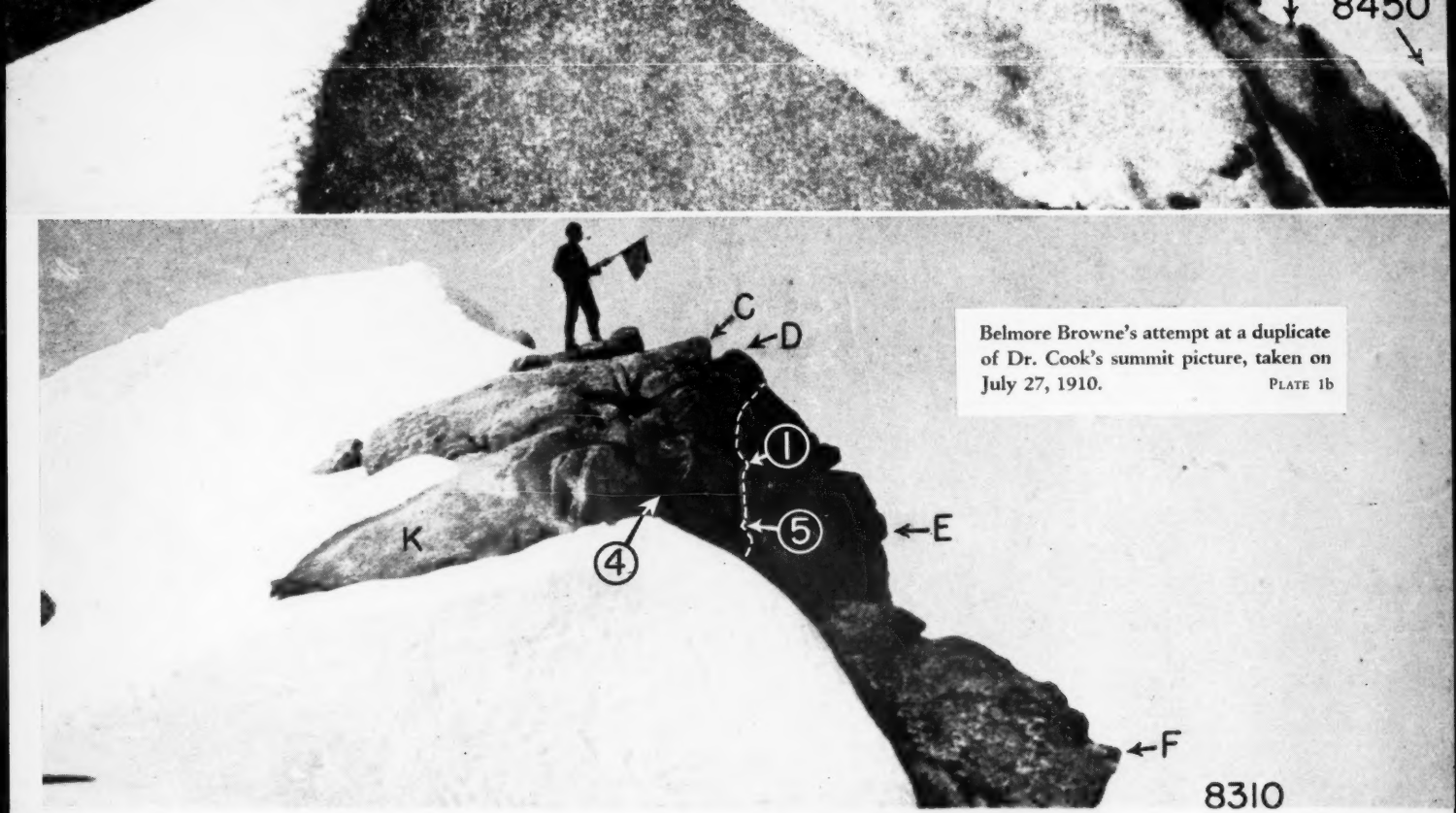
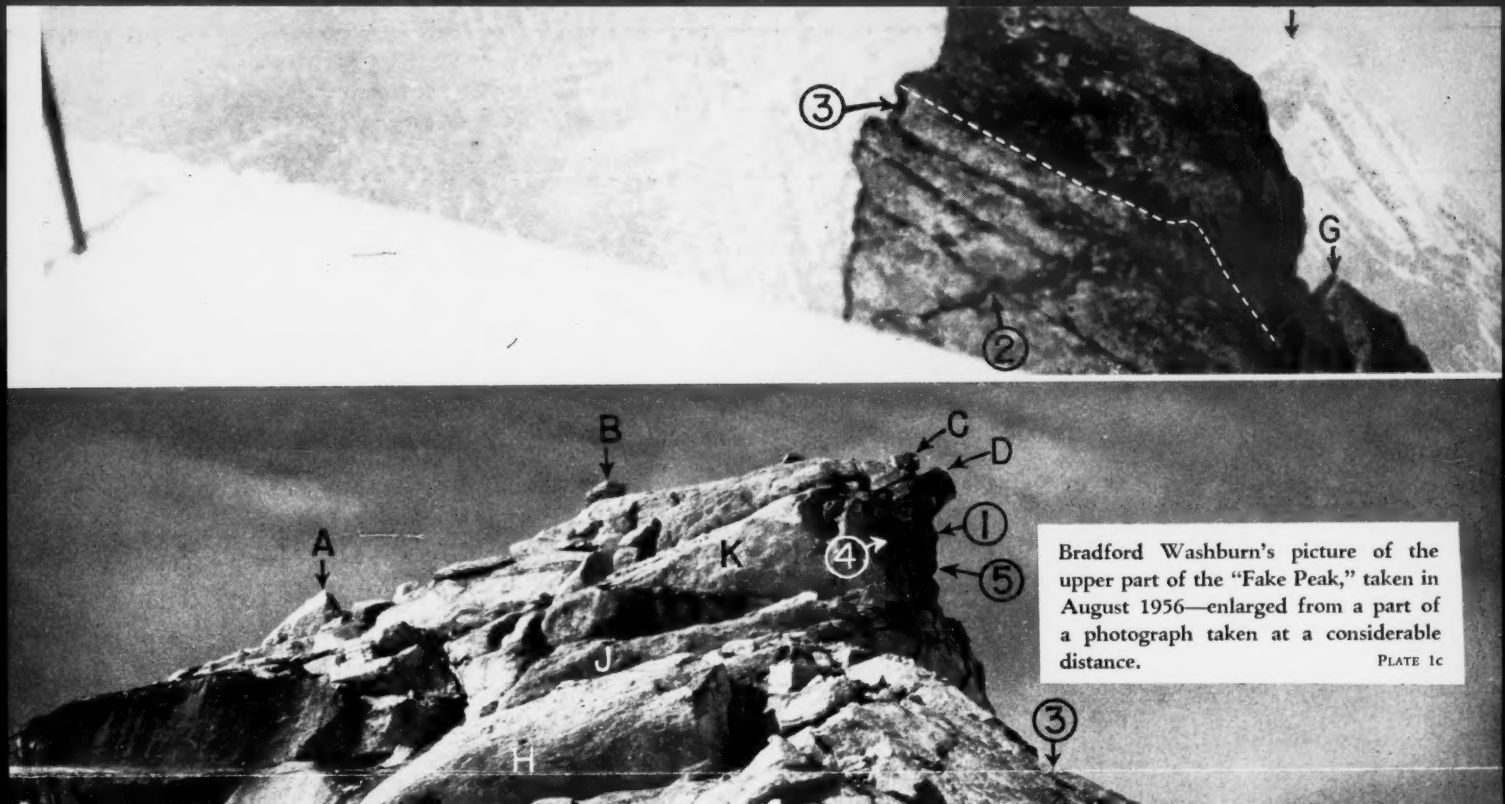


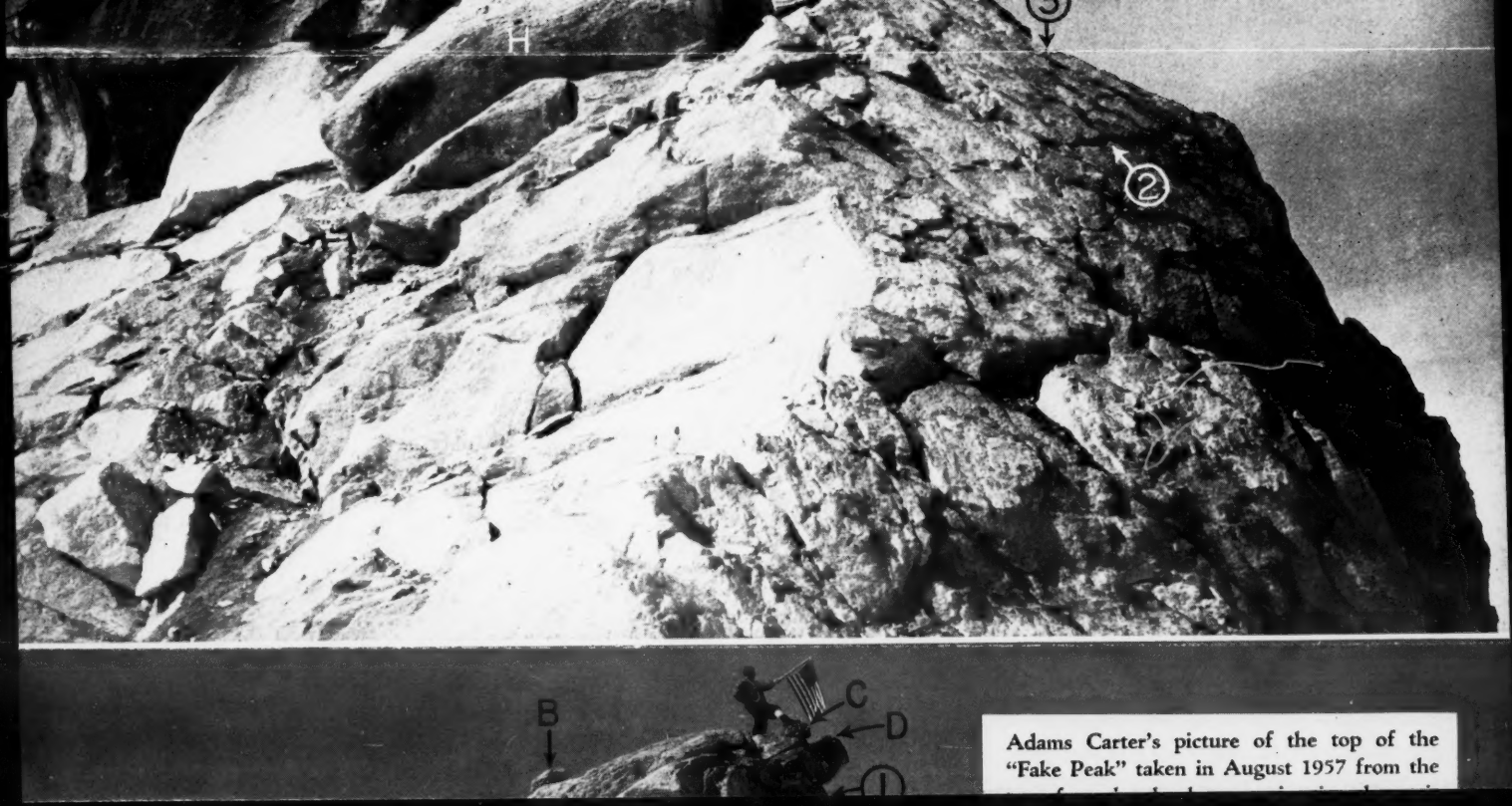
The upper part of Dr. Cook's controversial photograph of Edward Barrille on the summit of Mt. McKinley in September 1906 (from a duplicate negative—original negative appears to be missing). PLATE 1a



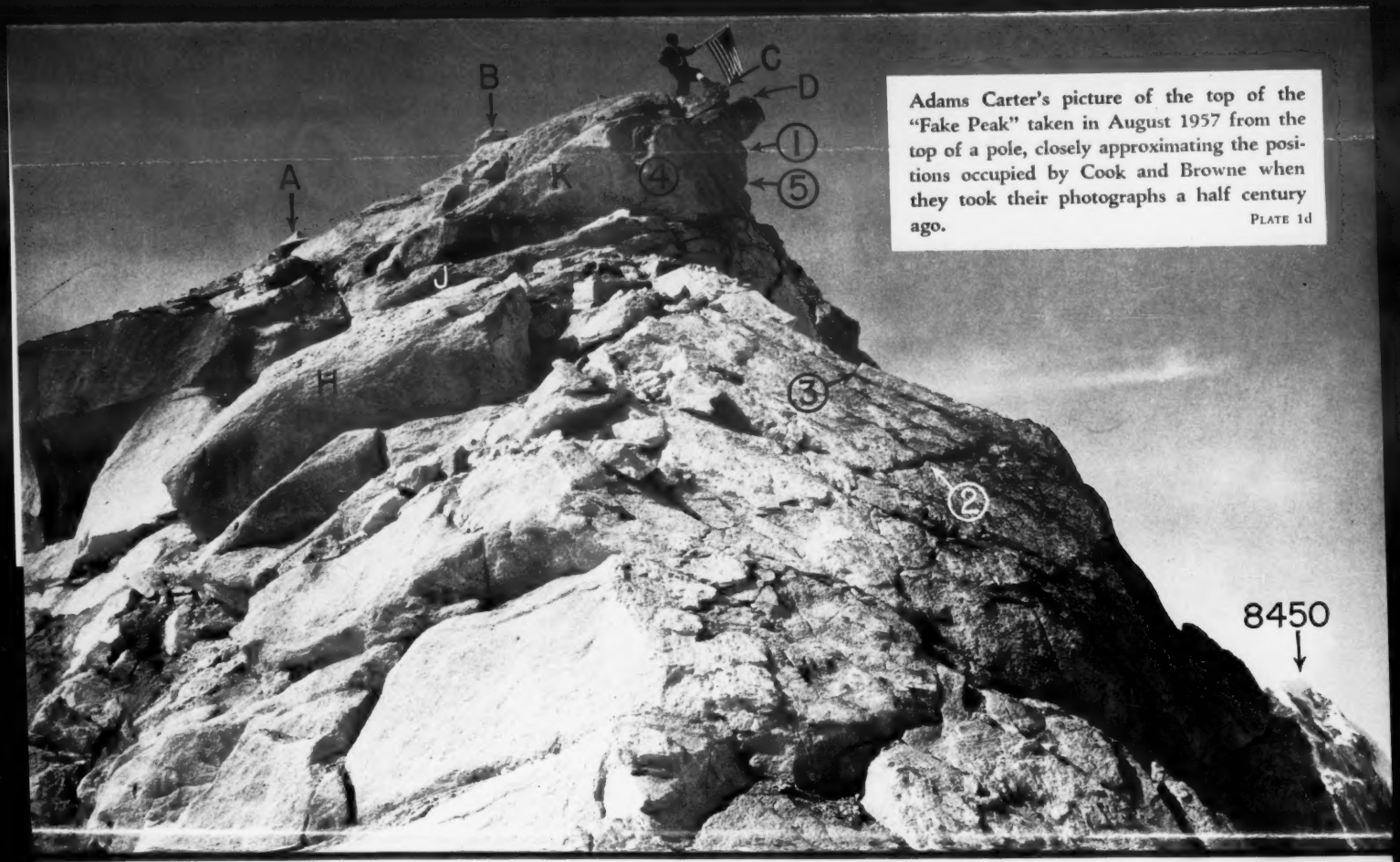
Belmore Browne's attempt at a duplicate of Dr. Cook's summit picture, taken on July 27, 1910. PLATE 1b



Bradford Washburn's picture of the upper part of the "Fake Peak," taken in August 1956—enlarged from a part of a photograph taken at a considerable distance. PLATE 1c



Adams Carter's picture of the top of the "Fake Peak" taken in August 1957 from the



Adams Carter's picture of the top of the "Fake Peak" taken in August 1957 from the top of a pole, closely approximating the positions occupied by Cook and Browne when they took their photographs a half century ago. PLATE 1d

Doctor Cook and Mount McKinley

BRADFORD WASHBURN

with assistance from ADAMS AND ANN CARTER

Nearly half a century ago Dr. Frederick A. Cook was dropped from the rolls of membership of the American Alpine Club because it was believed by the Council of the Club that his highly publicized claim to have made the first ascent of Mount McKinley was false. The decision was, to a large extent, based on information presented to the Club by our late distinguished members Belmore Browne and Herschel C. Parker. Over a long period of years, Dr. Cook and his proponents have bitterly assailed Parker and Browne, claiming that the evidence which they submitted was false, and insisting that the first ascent of Mount McKinley had, in truth, been made by Dr. Cook and his partner Edward Barrille.

During the last three years, a substantial amount of new factual information has been secured in the field by our members, Bradford Washburn and Adams Carter. Mr. Washburn's report, published in this issue of the American Alpine Journal, *represents the most complete and objective presentation ever made of this complicated subject. It not only accurately outlines past history, but adds much new and highly relevant material both in text and pictures. This article represents about one third of an exhaustive illustrated report on this subject submitted by Mr. Washburn to the American Alpine Club at the same time that Mrs. Elliott J. Vetter, Dr. Cook's daughter, presented a statement upholding Dr. Cook's side of the controversy. The full texts of both reports are available for study at the A.A.C. Clubrooms in New York City. It is believed that Mr. Washburn's report and his article in this issue of the* American Alpine Journal *present the Cook-McKinley controversy with fairness to all concerned and clearly uphold the decision of the A.A.C. Council which saw fit to drop Dr. Cook from membership in 1910.* —EDITOR.

DR. FREDERICK A. COOK claimed to have made the first ascent of Mount McKinley, accompanied by Edward Barrille, on September 16, 1906. Although, from the start, there was considerable skepticism in mountaineering circles about the feasibility of this ascent, the truth of Dr. Cook's assertions was not formally doubted until the fall of 1910 after Belmore Browne's and Professor Herschel Parker's party claimed to have revisited the actual spot where Dr. Cook's "summit" photograph had been made—a little rock ledge many miles southeast of the peak and less than 6000 feet high. This expedition visited the tributary branch of the Ruth Glacier (see Plate 3) both on the way in and the trip out from its unsuccessful attempt to climb the southern side of Mount McKinley. At the same time, a party from the Mazamas was on Ruth Glacier, hoping to climb the mountain and to locate Dr. Cook's "summit." They failed in both objectives, in the latter because of cloudy weather. (Metcalfe and Rusk, *Appendix B.*)

The Cook-Peary North Pole controversy was at its height during this same period, and the McKinley fraud issue was seized upon by Admiral Peary's proponents in such a way as to preclude for a long time the possibility of any unemotional analysis. The pro-Peary group and Dr. Cook's relatives and admirers have been at each others' throats for almost half a century. Throughout this period, all of the numerous analyses, articles, and even books that have been written on the McKinley controversy have consisted of nothing more than a re-evaluation of the original writings of Dr. Cook, Parker, Browne, and Stuck—some of them infinitely detailed comparative studies—virtually every word having been written by individuals who had never set foot on Mount McKinley or even its approaches, many of whom had never even seen McKinley. (See Bibliography, *Appendix B.*) Not one of those who have vigorously supported Dr. Cook over the years has been a mountaineer of note, nor has any one of these supporters, with the exception of Walter Gonnason, ever climbed a major Alaskan peak.

Because Dr. Cook was dropped from membership in both the Explorers Club (of which he had been a recent president) and the American Alpine Club (of which he had been one of the founders) the public assumed that he must be a fraud, and that both the McKinley ascent and the polar trip had been hoaxes. If Dr. Cook had not had an exceedingly loyal daughter (Mrs. Elliott J. Vetter) and a number of close and trusting friends, the "Cook Controversy" would have faded into history many years ago. However, every so often over the years an article has appeared supporting Dr. Cook and insisting that in the long run, history would prove his claims to be true.

Since the visits of the Parker-Browne and Mazama expeditions to the vicinity of the controversial "Fake Peak" in 1910, there appear to have been only six parties in this area, despite the passage of 47 years.

In the summer of 1938, Ted Leitzell, a firm supporter of Dr. Cook and an executive of the Zenith Radio Company of Chicago, revisited the Glacier Point region with one companion in order to re-observe the scene of the controversy at first hand.

In 1954, Elton Thayer's four-man expedition traversed the area in mid-April in the course of its ascent of the South Buttress of Mount McKinley. (Wood, *Appendix B.*)

From mid-March to mid-April, 1955, a Boston Museum of Science party spent a month in and adjacent to the Ruth Amphitheatre to finish observations for a new large-scale map of Mount McKinley. This five-man group (David Fisher, Carlton P. Fuller, George P. Gardner, Jr., Richard

T. Kleber, and Bradford Washburn) brought along a series of copies of Dr. Cook's pictures, in hopes that it might run across the location of some of the previously unidentified ones. I was particularly interested in finding the spot where the picture of the "Snowy Wonder of the Upper World, 15,400 feet" (Plate 7a) was taken, as I was intimately familiar with the entire upper part of McKinley and had never been able to identify this scene up there. We made several pictures which duplicated illustrations originally published with Dr. Cook's writings on Mount McKinley, and returned to civilization with a number of *definite new facts related to this subject, the first in nearly half a century.*

In July 1956 Walter Gonnason, of Seattle, and three companions climbed to an altitude of 11,400 feet on the east ridge of the East Buttress in an unsuccessful effort to prove that this route was feasible and that it was the one followed by Cook and Barrille in 1906. (See Plate 18.) This expedition was sponsored and, in part, financed by Dr. Cook's daughter, Mrs. Vetter, who lived in Talkeetna a large part of the time that it was in the field. Unlike Cook and Barrille, Gonnason's party was made up of experienced, well-equipped mountaineers. Instead of making the weary round-trip trudge all the way from the 1000-foot high snout of the uncharted Ruth Glacier, they were landed by plane well up the glacier in a region by this time thoroughly mapped and photographed. Yet they required three separate attempts along different routes before they could find a satisfactory way to the crest of the east ridge, which they followed for a short distance to reach their high point (11,400 feet). In 14 days they covered a round trip of 25 miles and climbed only 6000 vertical feet, while Cook claimed to have climbed and descended no less than 85 horizontal miles and 19,000 vertical feet in 12 or 13 days.

In August 1956 Norman H. Read, Nile Albright, and I spent three weeks in the immediate vicinity of the alleged "Fake Peak" for the purpose of studying carefully the pictures which Dr. Cook had taken there under more appropriate snow conditions than those encountered on my wintry visit of the year before.

In July 1957 Adams Carter led a ten-man group into the same area to take still more pictures to add to the growing dossier and to duplicate carefully a number of Browne's photographs, which would precisely document the changes of snow and rock in the intervening 47 years.

Two separate and distinct questions arise in a controversy of this sort: First: Did Dr. Cook climb Mount McKinley? Second: If not, where did he go?

The answers to both of these questions are based on two different types of evidence: The written description of his climb; and the photographs which illustrate Dr. Cook's articles and book. This expedition is most fully described in an article in *Harper's,* May, 1907 (pp. 821-837), and in his book "To the Top of the Continent." (See *Appendix B.*) I shall undertake to evaluate text and pictures as objectively and succinctly as possible in the light of the wealth of information which now exists about Mount McKinley and its surroundings.

The Written Description

Dr. Cook's book and articles were published at a time when flowery and verbose writing was in style, and it requires a substantial effort on the part of the reader to trim the texts down to a least common denominator of simple facts. Although the titles of some of the pictures vary, the story presented in all of the texts is essentially the same. My critique will therefore refer almost entirely to Dr. Cook's book, which he asserted (in another book, "My Attainment of the Pole," p. 533) was the authoritative document on the expedition.

The members of the party were Frederick A. Cook, M.D., who lived and practiced in Brooklyn, New York, and his partner Edward Barrille, a powerful blacksmith and horsepacker from Darby, Montana. The latter had been assistant packer on the lengthy exploration of the southern approaches of McKinley which the Cook-Parker-Browne eight-man party had just completed. John Dokkin, a prospector, accompanied these two on the first part of the way up the lower portion of Ruth Glacier, but left them at Glacier Point (3850 feet) and returned to the lowlands

The purpose of this trip was described in Dr. Cook's book: "As a final task for our season's work I now determined to explore the river systems and glaciers to the east of Mount McKinley, and to examine the northern arête for a route to the top of the mountain for a possible future ascent." (p. 186).

They left Susitna Station on or about September 4, 1906. (Dates are rather obscure at times in this account and must be estimated by counting forward and backward from specific references.) After chugging for three days by motor boat up the Susitna River to its junction with the Tokositna, they managed to push their boat up the swift lower Tokositna to the mouth of Alder Creek and there established a base camp. This spot is approximately 1000 feet high and 34 miles from the top of Mount McKinley as the crow flies.

On September 8 the party started out and reached Glacier Point the following night, after walking approximately 20 miles along the right

margin of the great Ruth Glacier (named by Cook after his eldest daughter). Here they pitched their tent on a mossy headland about 3850 feet high and 17 miles (airline) from the top of Mount McKinley, (Plate 4a). On the following day, September 10, Dokkin returned to base camp and Cook and Barrille advanced up the Great Gorge of Ruth Glacier about 7 miles to a point near the opening of the vast amphitheatre at its head.

As far as this (noon of September 10; bottom of p. 201) Cook's narrative is detailed and reasonable, and his pictures document the story well. It is significant that the photographs opposite pages 193 (Plate 6a) and 196 (probably made around noontime; see shadows) were taken at a point nearer to Mount McKinley than any other of the identified pictures. Its location is 13 miles southeast of the South Peak, 5000 feet high, about a mile and a half below the upper gateway of the Great Gorge and beneath the spectacular cliffs on the east side of the Gorge at the foot of The Moose's Tooth.

After this point (p. 202, line 4), in my opinion, the narrative ceases to describe what Cook and Barrille actually did.

According to the text, they continued their advance during the afternoon and pitched camp "on the glacier at an altitude of 8000 feet within a few miles of the northern ridge, the summit of which, 4000 feet above, was at this time our ultimate destination" (p. 202).

On the fourth day (September 11) they climbed through séracs during the morning, then chopped 2000 feet of steps to reach the crest of the Yukon-Susitna divide at nightfall. There, at 12,000 feet, they built an igloo and spent the night on the "northeastern arête" (p. 212).

For September 12 (the fifth day) the description of the route is extremely vague, with a cornice, ice blocks, gorges, sharp pinnacles, granite walls, and gloomy séracs all entering into the narrative. Somehow or other, before this day was over, the climbers were at work on the north arête (top of p. 215). That night was spent lashed to their ice axes on a 60-degree slope at 14,000 feet (p. 217).

After noon on September 13 (the sixth day) they reached a glacier leading to the "gathering basin near the summit" (p. 219), whence the going looked as if it would be much easier. (From here on, it seems as if Cook is trying to describe the upper part of the Muldrow Route). They spent another night in a little amphitheatre of snow at 16,300 feet, then picked their way "around successive séracs" (p. 225) to a final camp at 18,400 feet on the night of September 14, "with not enough energy left to talk or to eat" (p. 226).

At 10 o'clock on the following morning, they reached the summit of Mount McKinley (pp. 231-232). Although Dr. Cook clearly states that this was September 16, careful scrutiny of the preceding narrative leads one to wonder why it was not the 15th. Thus it took either eight or nine days to make the ascent.

The entire descent of the mountain is described *in eighteen words:* "The descent was less difficult, but it took us four days to tumble down to our base camp" (p. 233).

Thus, reaching the Tokositna on either September 19 or 20, Cook claims to have made the entire round trip up the south side of Mount McKinley in either 12 or 13 days. This was an exploit involving 19,000 vertical feet of climbing and at least 85 miles of walking, not taking into account any detours or zigzagging whatever.

Critique of the Text

It is extremely difficult to be precise in the criticism of so vague and confused a document as this book. While there are several possible routes out of Ruth Amphitheatre to the top of the South Peak, the only one which could fit in with Cook's text is the one via the East Buttress, onto which one is irrevocably forced by his description of the Yukon lowlands seen at sunset from the 12,000-foot camp on the night of September 11 (p. 207).

Avowedly starting on the southeast side of McKinley, Dr. Cook's story seems at first to be leading one up onto the divide between the Traleika and Ruth glaciers (see Plate 18a), whence the ascent would have to be pursued to completion via the East Buttress and then up the spur climbed by Thayer's party in 1954. Yet at the time that Cook and Barrille had reached 12,000 feet, the book states they were camped on the *northeast* ridge; and at 12,000 feet, they were climbing the *north arête.*

Though there are almost no séracs and big crevasses between 12,000 feet and the summit of the South Peak on the East Buttress route, they are constantly featured in Cook's text. Furthermore, there are better than two miles of very gentle travel involving a *600-foot descent* beyond the crest of the East Buttress. On a climb as steep and dramatic as this route, such a remarkable change would be one of the highlights of the description, *yet Cook never mentions any level going or descent in his entire description of the climb.*

Assuming that Dr. Cook did climb the peak by this route (as appears to have been assumed by his proponents), how then did he get around onto the north side, apparently the Muldrow route, to finish the climb (top of p.

215)? It is humanly impossible to traverse directly around from the east ridge of the East Buttress even as far as Karstens Ridge at or near the 12,000-foot level, because of five and one-half miles of fantastic precipices, icefalls, and buttresses, as well as both forks of the Traleika Glacier, which lie in between (see Plate 17). Furthermore, *Dr. Cook had a prismatic compass* (pp. 216, 233), and it would seem impossible for such an experienced traveler to make major errors in basic direction such as this statement implies.

In the midst of this geographical confusion are several remarks which, *out of context,* are accurate enough to have made many persons wonder how Dr. Cook could have written them without actually having been high on Mount McKinley. Here follow several of these statements, and what I believe to be sound explanations of Dr. Cook's ability to make them without ever having climbed higher than 5000 feet in 1906:

(1) The narrowing, turning and forking of Ruth Glacier, described while at the 8000-foot camp (p. 204), actually take place at an altitude of 6000 feet (Plate 18a). Furthermore, this phenomenon can easily be seen and studied in detail from a spot very near where Dr. Cook took his picture (opp. p. 193) (Plate 6a) just below the head of the Great Gorge at an altitude of only 5000 feet. The details of Cook's description of this part of Ruth Glacier are also badly in error (see paragraph 3 of "Errors in the Text").

(2) Dr. Cook's description (p. 207) of sunset from the crest of the Yukon-Susitna divide, and his seeing the "great green expanse beyond the Yukon," have been quoted as proof that he must at least have reached 11,000 feet near Traleika Pass. If he did, there is no photographic proof of it in any of his publications. In September 1903, going through these same green lowlands to the northeast of McKinley, he looked *up* and saw the other side of this range. Why then is it not perfectly logical to assume that one could look *down* from the crest of one of these ridges and see these same green lowlands?

(3) The statement that a new peak was visible "above the clouds 28° east of north" from an altitude of 14,000 feet on the evening of September 12 (p. 216) certainly has little bearing on whether or not Dr. Cook climbed Mount McKinley. There are quite a number of sizable peaks which lie more or less east of the mountain, easily visible from the lowlands on both sides of McKinley. Mounts Brooks, Mather, Deception, Silverthrone, and Eldridge are so widely scattered to the east of McKinley, that one or another of them would probably fit neatly into this position when seen from any of the eastern ridges of the mountain.

(4) A whole series of remarks is made in Dr. Cook's book relating to the fact that Mount McKinley has two summits, that a snow valley or glacier lies between them and that the climbing on this glacier between the two peaks is relatively easy. These statements are repeatedly used as proof that Cook "must have been up there." However, all of these features can be clearly seen from the vicinity of Camp Eielson (3700 feet) and Thorofare Pass (3900 feet), 30-35 miles northeast of McKinley on the present route of the Denali Highway. Moreover, Dr. Cook's own book contains proof of the fact that *he saw and noted their importance himself!*

On September 8, 1903, Cook, Fred Printz, and Robert Dunn climbed one of the foothills near Mount Eielson and he wrote: "Now and again we could see the summit, and from here it resembled very much the crown of a molar tooth. Four tubercles were distinctly visible; the saddles seen from the west formed two, and to the east were two rather higher and more distinct. These tubercles of this giant tooth are separated by large glaciers, whose frozen currents pour down very steep slopes. If it were not so difficult to get at this side of the mountain, we reasoned that here the upper slopes might offer a promising route" (p. 77).

Particularly note Cook's later references to these features during the climb: ". . . on to a glacier and into a valley between the two majestic peaks which we now saw graced the summit" (p. 213), and then later: "But now, from the upper slopes, we saw that there were several miniature ranges running up to two main peaks about two miles apart. To the west a ridge with a saddle, to the east a similar ridge, with one main peak to the southeast. This peak was the highest point, and to it we aimed to take our weary spirits" (pp. 225-6).

Any experienced climber who had seen this view and then later on examined McKinley carefully from the head of the Great Gorge (Plate 6b) could easily write an extremely accurate and detailed account of how the peak might be climbed, without ever having set foot on it himself. *There is not a word of descriptive material in Cook's book relating to the upper part of the mountain, which could not have been written with these two scenes in mind. But it was not too accurately fixed in his mind,* because Cook appears to have thought that Karstens Ridge (the northeast ridge of the South Peak), which he clearly saw in 1903 as he traversed the lowlands north of the mountain, was the same ridge as the one which drops eastward to Traleika Pass from the top of the East Buttress, which, in turn, he must have seen well from the head of the Great Gorge in 1906.

When he wrote his story, he apparently did not appreciate that these were two entirely different ridges separated by the whole upper basin of

Traleika Glacier! (Plate 17.) It is my conviction that the vast majority of Dr. Cook's narrative above 12,000 feet was conjured up from the memory of these two views.

(5) The accuracy of Dr. Cook's altitude of Mount McKinley (20,390 feet) has often been given as a reason why he must have reached the summit. Actually Dickey's rough survey of 1896 showed the altitude to be about 20,000 feet. In 1898 Muldrow and Eldridge had computed it to be 20,464 feet, and Alfred H. Brooks reported a new height of 20,300 feet from the average of a number of observations made during the summer of 1902. Cook uses the 20,300-foot altitude to caption the summit picture in his *Harper's* article in 1907, then changes to 20,391 feet in the text of this same article (p. 837), then quotes 20,390 feet as the official altitude in his book (p. 232). He carried no complex surveying equipment with him, so no long wait was required to complete calculations. The origin of this altitude (almost exactly midway between Brooks' and Muldrow's figures) certainly did not require him to climb Mount McKinley, and why he changed it between 1907 and 1908 will never be known.

Errors in the Text

While the above remarks may provide some background for understanding the source of the few reasonable factual statements in the later stages of Dr. Cook's narrative, there are many downright errors in the text, a number of which are summarized below:

(1) On page 197, Dr. Cook describes seeing "twelve cone-shaped peaks in an air line all 12,000 feet high, the last a pinnacle in the huge northern arête making a barrier to the conquest of Mount McKinley." There are only seven peaks in a line on this side of the valley, only six of which are visible from Cook's Glacier Point campsite, or anywhere near it (Plate 4). Their altitudes are 8310, 8450, 8460, 9100, 9140, 9545 (Mount Dickey) and 7650 feet (Mount Barrille). Not one of these peaks is in any way related to Mount McKinley, the northeast ridge of which lies 13 miles behind the most distant point visible from here.

(2) Attention must be called here to the omission of any mention whatsoever in the text of the side-trip which Cook and Barrille are now definitely known to have taken up to the head of Ruth Glacier's first northerly tributary (see photographic evidence). The only mention of this glacier is on page 196, line 6, where Dr. Cook says he crossed it on the way to Glacier Point on the second day of his trip. Mr. Leitzell has suggested that this detour may have been made by mistake—that Cook and Barrille, walking up Ruth Glacier in the fog, simply continued straight ahead up this glacier

instead of making a left turn up the main valley of the Ruth at this point—and that they had climbed up the tributary valley all the way to the pass at its head before they realized that this was a dead end. This hypothesis makes little sense for four reasons:

First, the weather was perfectly satisfactory about an hour before this turn was reached (see photo opposite page 175 of Cook's book); second, the weather appears to have been reasonably clear throughout Cook's circuit about the head of the tributary glacier as shown in Plates 7a, 8a, and 9 which were taken over a period of several hours *in the forenoon and afternoon;* third, it would seem utterly impossible to me that anyone, no matter how thick the fog, could blunder unwittingly off the main glacier and up this small glacier, which has none of the surface characteristics of a major valley glacier like the Ruth (Plate 4); and, lastly, the fact that Cook was not at all confused by this glacier is made clear *by him in his own text* when he simply states in so many words that *he crossed this tributary glacier and did so on the evening of the second day* (p. 196) just before camping at Glacier Point. The wording of the narrative and the timing of the pictures lead me to believe that this side-trip was made as a full-day round trip from Glacier Point on Cook's retreat, after he had made his way to the head of the Great Gorge and taken the photos shown on plates 4a, 5a, and 6a.

(3) While Ruth Glacier does change its appearance dramatically above the great Gorge, the details in Cook's description on page 204 are seriously in error: The glacier does not turn sharply to the southeast at the point where it narrows. It turns directly to the *west.* It then sweeps the *southern* side of Mount McKinley, not the eastern slope. His statement that "the main tributary sent prongs on to the great north-east arête" is ridiculous. None of the tributaries of the Ruth comes from anywhere near any part of the northeast ridge (Plates 17 and 18a). This confusion in the direction of and relationship between McKinley's basic ridges repeatedly occurs throughout Dr. Cook's book and is one of the fundamental weaknesses of the whole account.

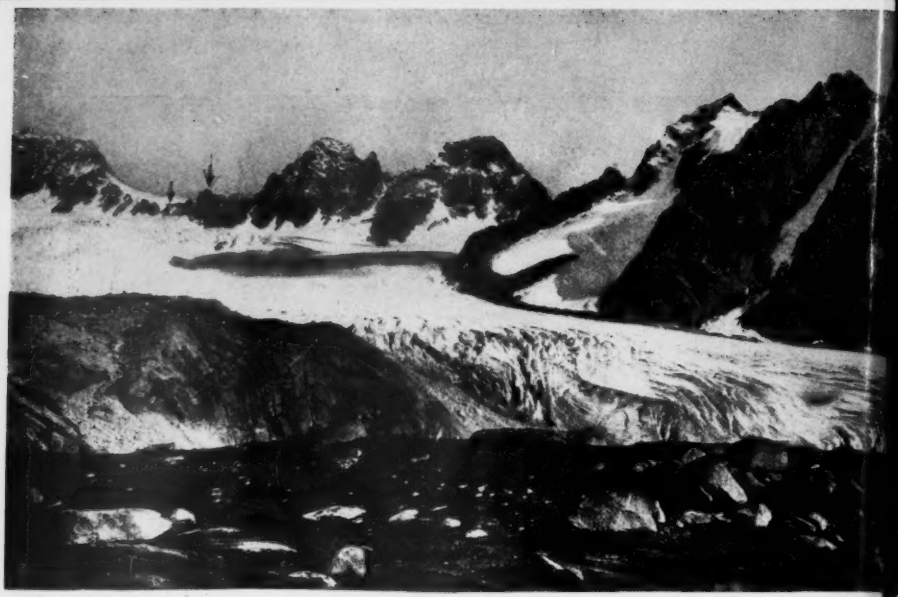
(4) On page 206, Dr. Cook describes climbing the *lateral moraine* of an icefall (sérac). This was above his 8000-foot camp. Even today, when there is far less snow and ice at this level than in 1906, no moraines are visible along the sides of any of the Ruth's valleys above about 5000 feet (Plate 18a), even at the end of the summer.

(5) The Geographical confusion of the text continues on page 212 where it is stated that Cook and Barrille camped on the "north-eastern arête" (the 12,000-foot camp). How they managed to make this incredible leap from

PLATE 2

Aerial photo by Keith A. McClaine, 1956.

McKINLEY FROM SOUTHEAST. Arrow shows "Fake Peak."



AN AMPHITHEATRE
A typical gathering basin of the Mt. McKinley glaciers

PLATE 3a *Photo by Cook, September 1906.*

VIEW EASTWARD FROM GLACIER POINT. Above first northern tributary of Ruth Glacier are "Fake Peak" (left) and McKinley Cliff, marked by arrows.

PLATE 3b *Photo by Carter, July 24, 1957.*

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FIRST FIVE OF THE TWELVE NEW PEAKS OF RUTH GLACIER
Camp at 5,000 feet

PLATE 4a *Photo by Cook, September 1906.*

RUTH GLACIER FROM COOK'S CAMPSITE, GLACIER POINT.

PLATE 4b *Photo by Washburn, August 3, 1956.*

THE EASTERN CLIFFS OF MT. McKINLEY

PLATE 5a *Photo by Cook, September 1906.*

MT. BARRILLE. Looking up Great Gorge of Ruth Glacier to Ruth-Traleika Divide peaks in right background.

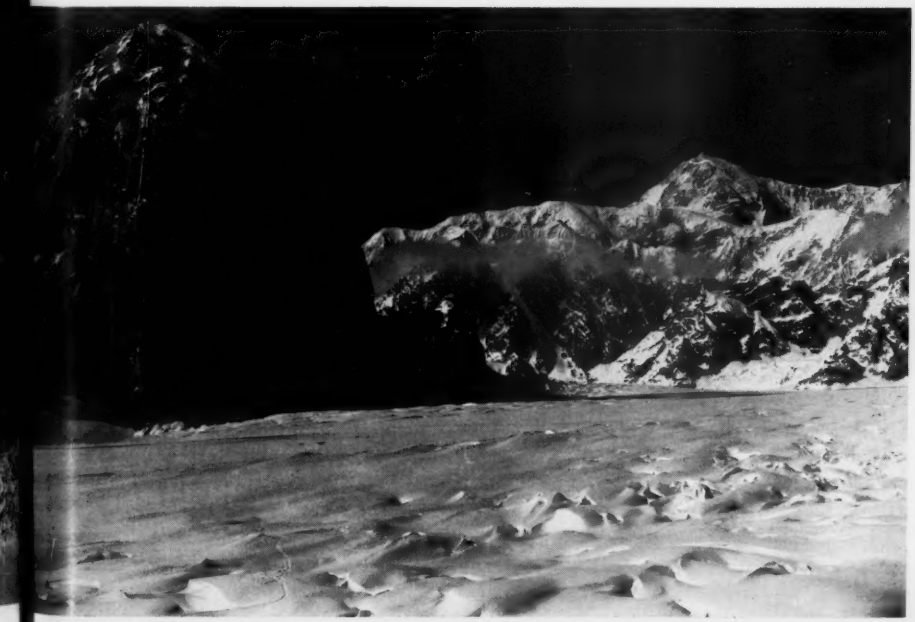
PLATE 5b *Photo by Washburn, April 12, 1955.*

MT. BARRILLE: THE NORTHEAST RIDGE

PLATE 6a *Photo by Cook, September 1906.*

MT. BARRILLE (left), from upper entrance of Great Gorge. Mt. McKinley, obscured by clouds in Cook's picture above 11,500 feet, appears clearly in lower photograph.

PLATE 6b *Photo by Washburn, August, 1956.*



IN THE SILENT GLORY AND SNOWY WONDER OF THE UPPER WORLD. 15,400 FEET

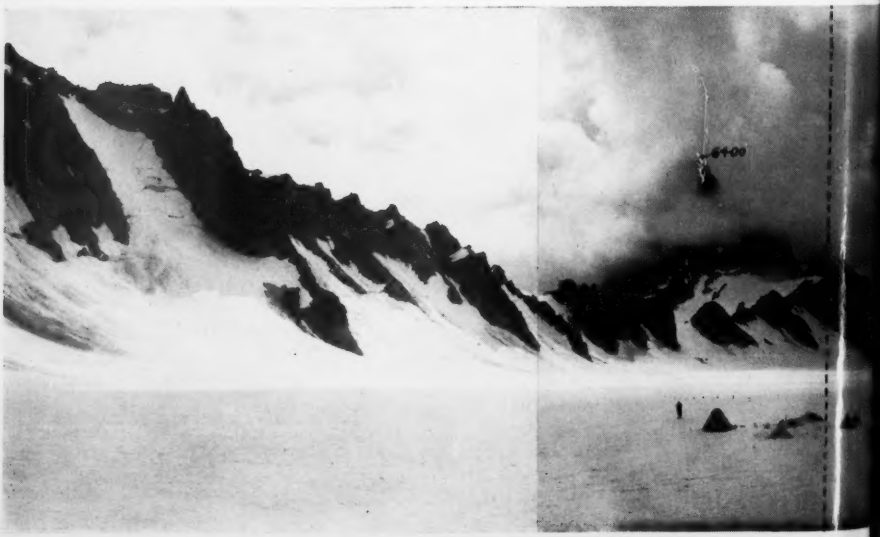
PLATE 7a

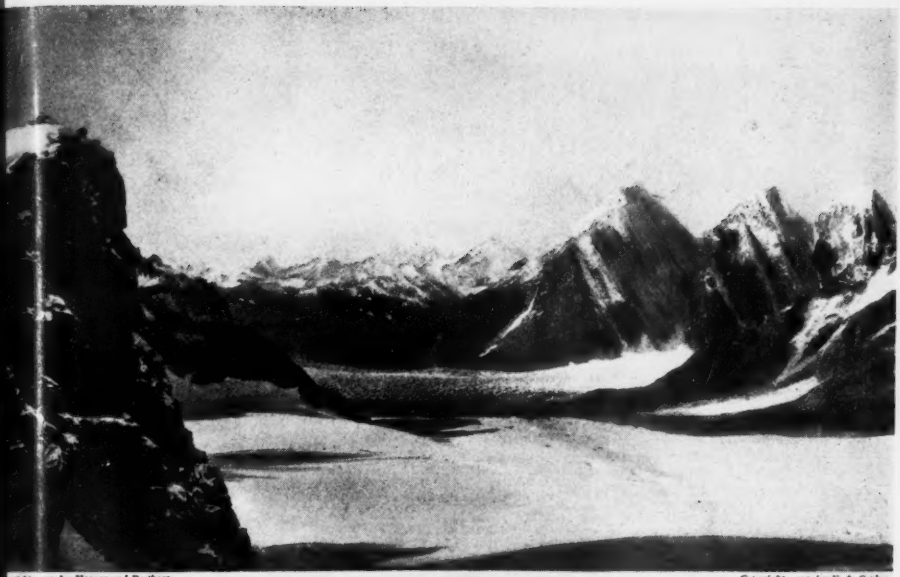
Photo by Cook, September 1906.

"FAKE PEAK" (arrow at left) FROM NORTH. Arrow at right shows McKinley Cliff, just outside Cook's picture. Clouds partially or totally obscure Peak 6400.

PLATE 7b

2 Photos by Washburn, August 1956.





...right, 1907, by Harper and Brothers

SCENE OF GLACIERS, PEAKS AND CLIFFS

Shoulder of Mt. McKinley, a cliff of 8,000 feet. Ruth Glacier, a freight carrier of the cloud world. The Great White Way, where the polar frosts meet the Pacific drift of the tropical dews

Copyright, 1907, by F. A. Cook

PLATE 8a

Photo by Cook, September 1906.

VIEW FROM TOP OF "FAKE PEAK." McKinley Cliff is at left. Ruth Glacier flows across background from right to left, behind Glacier Point and in front of Peaks 8310, 8450 and 8460.

PLATE 8b

Photo by Carter, July 23, 1957.

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Copyright, 1907, by F. A. Cook

THE TOP OF OUR CONTINENT

The summit of Mt. McKinley, the highest mountain of North America. Altitude, 20,300 feet

PLATE 9

DR. COOK'S "SUMMIT" PICTURE

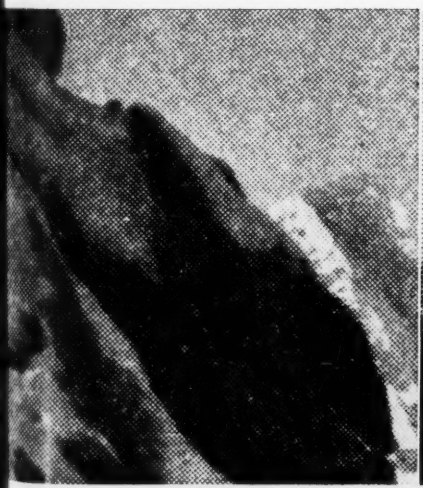
September, 1906.

PLATE 10a

BELMORE BROWNE'S PHOTOGRAPH OF THE "FAKE PEAK."
July 27, 1910.

ENLARGEMENT OF PEAK 8450.
From Cook's "Summit" picture, Plate 9.
(See "Top of the Continent" opp. p. 227.)

LATE 10b



ENLARGEMENT OF PEAK 8450.
From Cook's picture, Plate 8a.
(See "Top of the Continent" opp. p. 239.)

PLATE 10c

PLATE 11a

Photo by C. P. Fuller.

Sheldon and Washburn surveying near spot where Cook took Photo 7a (circle).

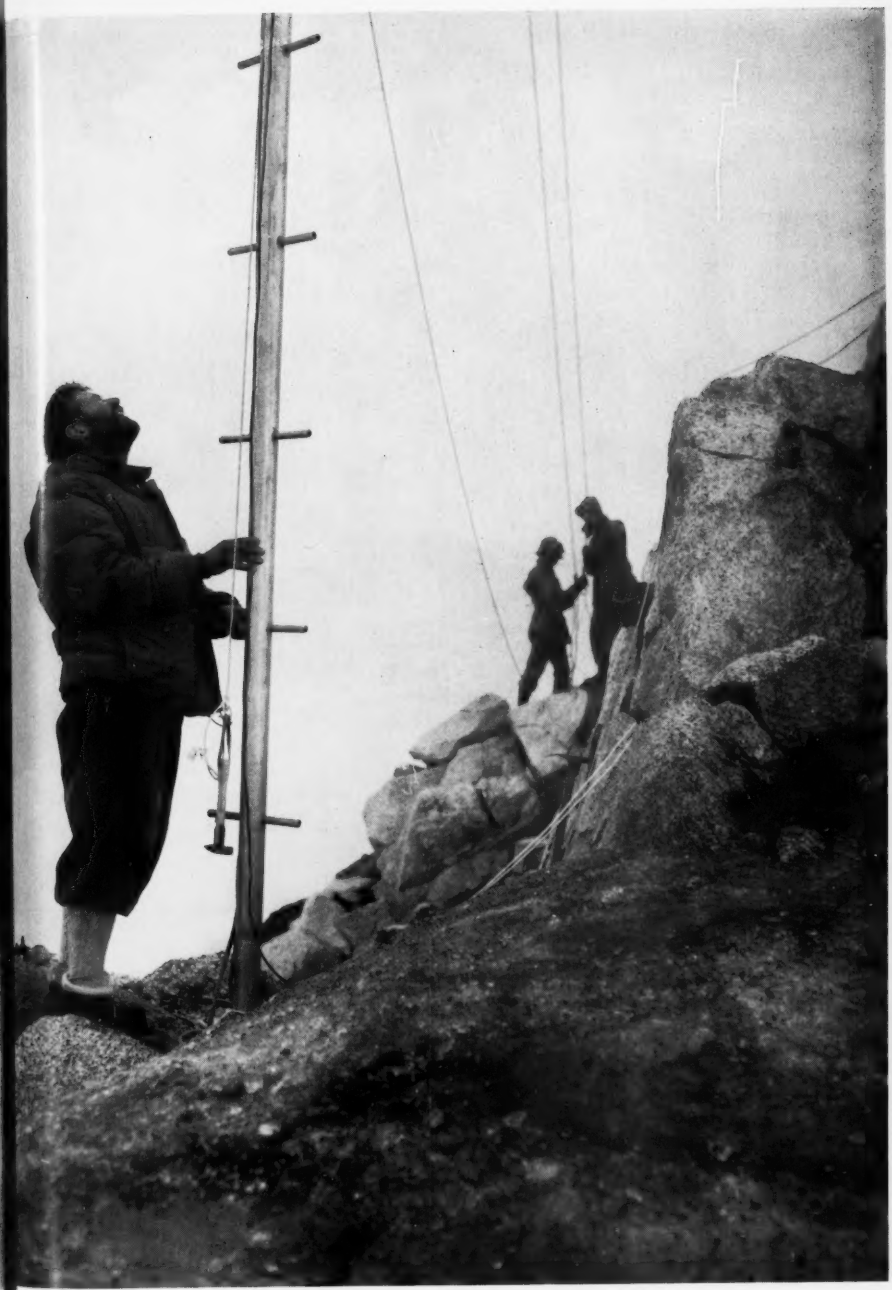


PLATE 11b

Carter supervises erection of mast.
July 21, 1957.

PLATE 13a *Photo by Browne, June 28, 1910.*

APPROACHING "FAKE PEAK" FROM NORTHEAST. Despite differences in snow cover, ledges and cracks reveal that these are duplicates. Note absence in lower photo of rocks that made Cook's right skyline in Plate 9.

PLATE 13b *Photo by Carter, July 23, 1957.*

PLATE 14

Don Sheldon beside plane near location of Plates 7a and 7b. March 31, 1955.

PLATE 15

PLATE 15

Don Sheldon.

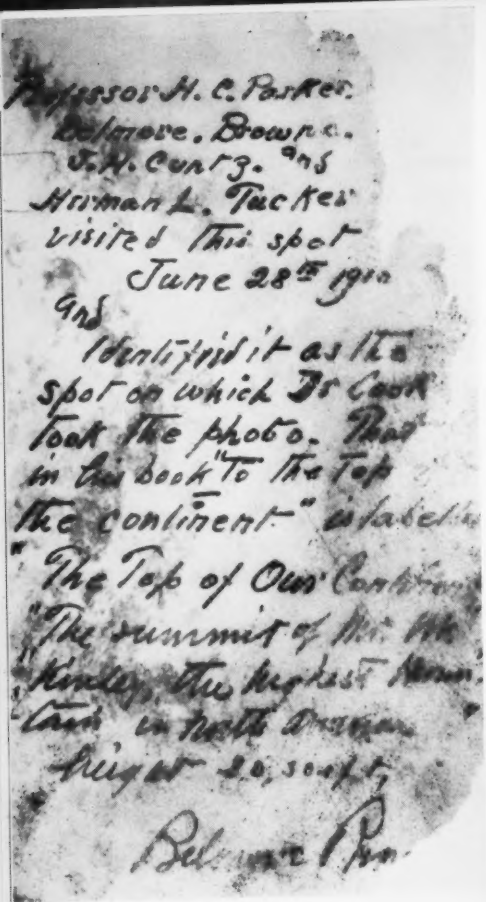

Professor H. C. Parker.
Belmore. Browne.
J. H. Curry. and
Herman L. Tucker
visited this spot
June 28th 1910
and
identified it as the
spot on which Dr Cook
took the photo. That
in the book "To the Top
the Continent" labelled
"The Top of Our Continent"
"The summit of Mt. Mc
Kinley, the highest Mount-
ain in North America
Height 20,300 ft.
Belmore Bro

PLATE 16a

NOTE LEFT BY BELMORE BROWNE ON "FAKE" PEAK.

June 28, 1910.

PLATE 16b

NILE ALBRIGHT DISCOVERS BELMORE BROWNE'S NOTE.

August 12, 1956.

the Ruth Amphitheatre to the other side of the mountain over both forks of the Traleika is not explained (Plate 17).

(6) While telling about the route upward *from a camp on the northeastern ridge,* Cook suddenly describes a "steep arête over which we could go from the west to the northern face on to a glacier and into a valley between the two majestic peaks which we now saw graced the summit" (top of p. 213). This maneuver, when carefully contemplated along with a good map of Mount McKinley and the context, involves such incredible geographical gymnastics that it is ridiculous. Mount McKinley, furthermore, has no northern *ridge,* although it is often mentioned by Dr. Cook; rather, it has a western buttress, two northeastern ridges (Pioneer Ridge and Karstens Ridge), a vast north *face* (Wickersham Wall).

The descriptions of the approach to the summit, of the top itself, and of the view from it are replete with inaccuracies and exaggerations:

(7) On page 230, the text says: "Our route was over a feathery snowfield which cushioned the gap between rows of granite pinnacles."

There are no granite pinnacles whatever above 18,400 feet on the entire cone of Mount McKinley except on the *northwest* approach from Denali Pass *on exactly the opposite side* of the mountain from any route that Cook could conceivably have followed out of the Ruth Valley. Even there, there are only a few small metamorphosed ledges protruding through the snow between 18,400 and 18,600 feet.

(8) On page 231 comes the now-famous statement: "We edged up along a steep snowy ridge and over the heaven-scraped granite to the top." The top of Mount McKinley's South Peak is buried deeply beneath a covering of windpacked snow so hard that it is almost like ice. The nearest rock ledges lie about a hundred feet down the steep southwest face and could be reached only by *descending on the opposite side* from the one up which Cook and Barrille are supposed to have come. The appearance of the summit has not changed a whit in the forty-odd years since Stuck described and photographed it, its contours probably controlled by the way the prevailing wind sweeps up the ledges of the southwest face. In 1942, 1947, and 1951, I could see no change at all in basic contours and, of course, no rock was visible anywhere (see Plate 19).

How then could Cook know that the top was underlain by granite (as it is) if he had not been there? He had seen the peak from the west, north, and east in 1903 and from the southeast in 1906. The tawny granite of the South Peak is clearly identifiable even from a great distance and without field-glasses, as it contrasts sharply with the dark schists and slates of the other peaks around it and other sections of the main mass of McKinley itself

(notably the black slate of the North Peak). Cook, too, remembered well his difficulties with McKinley's cliffs in 1903: "After a careful search we were compelled to acknowledge defeat, for there was no way around the succession of sheer granite cliffs" (p. 70).

As before, this thread of fact could easily have been drawn from Cook's own experience, as recorded in this same book.

(9) From the top, Dr. Cook talks about seeing the "silvery bands" of the Yukon and the Tanana (p. 232). Although McKinley can be seen from both, I doubt whether either can be identified in reverse amid the vast sea of nondescript and level countryside 125-150 miles away to the north. Stuck was there on a perfect day and failed to identify either river, even though he knew them both intimately and knew exactly where to look. In 1942, 1947, and 1951, the lowlands to the north were too much obscured by clouds for us to pick out any distant details in that direction.

That the Pacific Ocean, Mount Redoubt and Mount Iliamna are visible, as Cook states, I question. I have been on top of McKinley with flawless weather to the southward, and have seen none of the three. Earth curvature almost certainly precludes seeing the Pacific Ocean, hidden behind the Chugach and Kenai mountains and Kodiak Island. Moreover, Mount Spurr (in addition to considerable curvature) probably conceals both Redoubt and Iliamna. Mount Spurr, of course, is easy to see and to identify.

(10) If there is a "protected nook" (p. 233) near the summit of Mount McKinley in which the record of any trip could be left, I have never seen it. The whole upper cone is polished and gouged by the fierce winds which sweep it alternately from every direction, and there is no shelter of any sort, large or small, anywhere near the top.

(11) Dr. Cook's own description of the summit written on pages 530-531 of "My Attainment of the Pole" could not be more indefinite: "No one peak towers gigantically above the others. On the top are many peaks, no particular one of which can with any accuracy of inches be decided arbitrarily as the very highest. The top of a mountain does not converge to a pin-point apex. One looks out, not into immediate space on all sides, but over an area, as I have said, of many peaks."

This statement is in marked contrast to the simple, accurate, and unembellished description of Hudson Stuck in his excellent little book, "The Ascent of Denali." On page 99, the actual top of Mount McKinley is succinctly described as follows: "This, then, is the actual summit, a little crater-like snow basin, 60 or 65 feet long and 20 to 25 feet wide, with a haycock of snow at either end—the south one a little higher than the north." Although Stuck then remarks that "the whole thing looked as

though every severe storm might somewhat change its shape," it had not changed in any way between the time when he wrote these words in 1913 and the time in 1951 when I last saw this same scene myself. (See *Appendix A,* "General Description of the Summit of Mount McKinley," for further details.) The view across this "little crater" from the North Drift to the true top of the South Peak is seen in Plate 19, made on July 19, 1942.

The top of Mount McKinley is definitely *the top!* Nothing could be less accurate or more misleading than Cook's description, nothing more precise and simple than Stuck's.

Critique of the Illustrations

Since it is impossible to reproduce with this article all of the 119 photographs submitted with the original report to the Special Committee of the American Alpine Club, I have had to omit a number of Dr. Cook's pictures as well as some of Belmore Browne's and more recent ones of Adams Carter's and mine. All but three of the pertinent photographs by Dr. Cook have been duplicated and the site of one of the unduplicated ones has been precisely located. Six of Belmore Browne's 1910 pictures were duplicated in 1957. Discussion will be limited to the photographs printed here, which are most relevant to the controversy under discussion.

The camera with which most of my duplicates were made was a 4″x5″ Crown Graphic, with a 135 mm. (5.3″) lens. It was not until very careful analysis and comparison of these pictures, after the 1956 trip, that it became apparent that Dr. Cook's 5″x7″ camera must have had a lens of about 7.5″ focal length. Adams Carter in 1957 took a 4″x5″ Graphic with a 127 mm. (5.0″) lens which much more clearly approximated Cook's results. It should be added here that Dr. Cook was an excellent photographer and his pictures, taken with a large, heavy camera, are a remarkable and beautiful series. Several of these appeared in *Harper's Monthly Magazine,* May 1907, as well as in Cook's book. In discussing the titles, I shall evaluate both when they differ. In each case where a picture is given as being opposite a certain page, the reference is to Dr. Cook's book, "To the Top of the Continent."

Plate 3a. (Opp p. 197 in Cook.) Title: "An Amphitheatre. A typical gathering basin of the Mt. McKinley Glaciers." Camera elevation, 3850 feet; direction, east. Duplicated July 24, 1957 by Carter (Plate 3b).

This picture was made from the crest of Glacier Point, about 200 yards east of the location of Dr. Cook's camp shown in Plate 4a and approximately 17 miles southeast of Mount McKinley's summit. The "first north-

erly tributary" (p. 196) of Ruth Glacier flows from left to right across this picture, joining Ruth Glacier about a mile beyond the right edge. The pass from near which the "15,400-foot" picture (Plate 7a) was taken is just out of sight in the upper left. The "Fake Peak" and "McKinley Cliff" lie just to the right of the smooth snow collar on the left (see arrows). The spot on Glacier Point where this picture was taken is 3.08 miles from the "Fake Peak."

Plate 4a. (Opp. p. 192.) Title: "First Five of the Twelve New Peaks of Ruth Glacier. Camp at 5000 feet." Camera elevation, 3700 feet; direction, west. Duplicated August 3, 1957 by Washburn (Plate 4b).

This picture was taken from Dr. Cook's campsite, about 200 yards west of Plate 3a and somewhat below the crest of Glacier Point. The location is 17 miles southeast of Mount McKinley which, if not hidden, would lie in the background off the picture to the right. Ruth Glacier flows from right to left in the foreground and the mountains shown are (left to right) Peaks 8450, 8460, 9100, and 9140. As can be seen, this campsite was exactly relocated. Six small rocks which held down the edge of Dr. Cook's tent were still in place (and left undisturbed). We also found *two of Cook's six one-pint fuel tins* right at the location of the tent door; also a scrap of guy-line and a part of one of the wooden tent pegs. The peak on the right (Peak 9140) is the one shown opposite page 205. The peak at the left (Peak 8450) is the same one which appears on the lower right margin of the "summit" picture, Plate 9 (opp. p. 227). This same peak is the second from the right in Plate 8a (opp. p. 239).

Plate 5a. (Opp. p. 171.) Title: "The Eastern Cliffs of Mount McKinley." Camera elevation, 4400 feet; direction, north. Duplicated April 12, 1955 by Washburn (Plate 5b).

This picture was taken at a point 13.5 miles southeast of the top of Mount McKinley and 2.69 miles south-southeast of Mount Barrille (7650 feet), which is the dark peak at its center. The cliffs at the left are the east face of Mount Dickey and the distant sunlit peaks in the far background are on the west of the Ruth-Traleika Pass, 10 miles to the north. The appearance of the spur in the right middle background is markedly different in the duplicate because the bare rocks are covered with winter snow. This picture was taken at precisely the same spot as that opposite page 205. The scene is not related in any way to the Eastern cliffs of Mount McKinley, which are at least a dozen miles away, on the other side of Mount Barrille.

Plate 6a. (Opp. p. 193.) Title: "Mt. Barrille: The Northeast Ridge." Camera elevation, 5000 feet; direction, northwest. Duplicated April 15, 1955 by Washburn (Plate 6b).

This picture was made from the east side of the Great Gorge of Ruth Glacier about 1.5 miles below the upper gateway of the Gorge and at the very foot of the huge granite cliffs of The Moose's Tooth. This must have been nearly the spot where Cook says he stopped for lunch on his third day (September 10, 1906). Mount Barrille (7650 feet) is at the left. Ruth Glacier flows across the foreground from right to left. The lower part of Mount Dan Beard (10,260 feet) is in the right background, and the cliffs and buttresses of Mount McKinley's southeast side lie seven miles away in the central background, across the level expanse of Ruth Amphitheatre. Mount McKinley, clearly visible in the duplicate, is obscured in the original above 11,500 feet. This picture was taken at a spot 13 miles southeast of Mount McKinley and it is in no conceivable way related to McKinley or its northeast ridge. It was exposed at the same spot as the photograph opposite page 196.

Plate 7a. (Opp. p. 226). Title: "In the Silent Glory and Snowy Wonder of the Upper World, 15,400 feet." Camera elevation, 5335 feet; direction, south. Duplicated August, 1956 by Washburn (Plate 7b).

This picture was made at a point 18.9 miles southeast of Mount McKinley. It was taken in the afternoon from a ledge just east of the pass at the head of the first northern tributary of Ruth Glacier. Many of the peaks in the left background of Plate 3a appear, seen from the left at a 90° angle. Clouds obscure the upper part of Peak 6400.

The little rock peak marked on Plate 7b by the left arrow is the "Fake Peak," 4100 horizontal feet away. The black ledge under the right arrow is "McKinley Cliff." (This is seen at the left in Plate 8a, which was taken from the top of the "Fake Peak.") Since the photo shown in Plate 9 was made at the "Fake Peak" around 10-11 A.M. and this picture was made in the afternoon, it suggests that Cook and Barrille spent the better part of a day exploring and photographing in this side-valley.

There are only four photographs in Dr. Cook's book which are labeled with altitudes: Photo opposite page 238 (13,000 feet), Plate 4a (5000 feet), Plate 7a (15,400 feet), and the picture of the summit (20,390 feet) (Plate 9).

The site of the first of these has never been located, but the last three now have been precisely identified. The 15,400-foot picture was a mystery for nearly half a century until the site was located in the spring of 1955. The factors leading to its discovery were: (1) the granitic rock, (2) its general appearance which suggested an altitude of from 5000 to 6500 feet, and (3) the fact that Dr. Cook spent so little time on his trip, which meant that it must have been taken somewhere near where his other pictures

were made. This valley was the first place chosen for the search, after carefully weighing all these factors. The spot whence the photograph was taken was discovered in less than five minutes of flying around the area!

This picture, along with that of the summit (Plate 9), is the most flagrant example of misrepresentation in Dr. Cook's book. At no time during Dr. Cook's life did he ever state in print that this photograph was improperly identified. His daughter has suggested that the digit "1" may have been added in error by the publishers in front of 5400, thus making a very accurate figure grossly inaccurate. If such was the case, why did not Cook immediately call attention to such an obvious error? *If this editorial error was made, Cook then made still another bad mistake in the altitude:* for this spot is only a 2-hour walk from Glacier Point, to which Cook himself has given an altitude of 5000 feet (see title of Plate 4a). This is 1635 feet higher than Cook's Glacier Point campsite (3700 feet) *which Cook says was 5000 feet high*—thus making the place where this picture was taken *6635 feet high, calculated on Cook's own scale of values,* not 5400, as has been suggested. No aneroid barometer could have made an error of this magnitude in so short a time.

If Cook really meant his readers to think that this scene was only 5400 feet high, would he have titled it "Snowy Wonder of the *Upper World,*" when it represents an insignificant part of an insignificant little valley nearly 20 miles from Mount McKinley? Would he have placed this picture in his book on the opposite side of the same page on which the "summit" photograph is printed, and facing a page of description relating to the ascent to the 18,400-foot camp, if it dealt with irrelevant subject matter in the foothills many miles away?

Why would Cook and Barrille have detoured here, four miles off the obvious route up the main course of Ruth Glacier, on a reasonably clear day (see Plates 7a, 8a, and 9, all of which were taken in this same area) when they were so short of food, fuel, and time? And having done it, *why does he make no mention of this side-trip in any of his writings? Fully half of Dr. Cook's fuel supply was exhausted in this area,* many miles from even the bottom of Mount McKinley. In 1956 we discovered a food-sack and a third 1-pint fuel can (exactly like those found at the Cook campsite at Glacier Point) in the rocks *at the exact spot where this picture was made.* It would be unthinkable to attempt the round-trip up Mount McKinley from Glacier Point with only three pints of alcohol for nine or ten days of frigid high-altitude living—particularly if the stove was to be used for cooking trail-lunches as well as breakfast and supper (see bottom of page 201).

Plate 8a. (Opp. p. 239). Title: "Scene of Glaciers, Peaks and Cliffs. Shoulder of Mount McKinley, a cliff of 8000 feet. Ruth Glacier, a freight carrier of the cloud world. The Great White Way, where the polar frosts meet the Pacific drift of the tropical dews." [*Harper's,* p. 833, title: "The View from 16,000 feet."] Camera elevation, 5360 feet; direction, southwest. Duplicated July 23, 1957 by Carter (Plate 8b).

This picture was made from the top of the "Fake Peak," and proves conclusively that Dr. Cook and Ed Barrille visited this spot. The "Fake Peak" is visible in the backgrounds of both Plates 3a and 7a, and it is the one near the top of which Barrille is standing in Plate 9. Exposed in the late forenoon, close to the time when photo in Plate 9 was made, the camera is aimed in nearly the same direction, so that the second peak from the right in the background (Peak 8450) of this picture is seen halfway down the right edge of Plate 9. The distant peak is 5.88 miles west of this point on the other side of Ruth Glacier, which flows right to left across the middle background. "McKinley Cliff," named by Parker and Browne in 1910, because of a profile (not clearly seen in this view), is in the left foreground. Its top is 5490 feet high. There is a dramatic difference between the ridiculous title of this picture as it first appeared in *Harper's* and the one which is used in "To the Top of the Continent." Even the revised title is grossly misleading. Mount McKinley is over 14 miles to the right of the nearest point to it which is visible in this scene. No part of this scene, near or far, could in any conceivable way be classed as a "shoulder of McKinley"—nor is there an 8000-foot cliff anywhere in sight! The cliff in the immediate left foreground ("McKinley Cliff") drops a total of just over 600 feet to the lowest snowfields beneath it. The summit of the highest peak in the background is only 8460 feet high and the highest continuous steep slope in the picture drops 5300 feet, from the top of Peak 8310 to the level surface of Ruth Glacier in the middle background.

Plate 9. (Opp. p. 227). Title: "The Top of our Continent. The summit of Mount McKinley, the highest mountain in North America. Altitude 20,390 feet." [*Harper's,* opp. p. 834, title: "The Flag on the Summit of Mount McKinley, 20,300 feet above sea level."] Camera elevation, approx. 5300 feet, direction, southwest. Duplicated June and July 1910 by Parker, LaVoy (neither shown here) and Browne (Plate 10a); August 1956 by Washburn (Plate 1c); July 23, 1957 by Carter (Plate 1d). Distance to the summit of Mount McKinley, 19.48 miles.

This photograph is probably the most controversial picture in the entire history of exploration. Dr. Cook supported it throughout his life as repre-

senting the true top of Mount McKinley, and all of his proponents have insisted likewise. As it first appeared in *Harper's,* the picture was very badly retouched and the little distant peak (Peak 8450) on the right hand margin was completely obscured.

Dr. Cook's "summit" picture in no way resembles the actual summit of Mount McKinley. (For complete details see Appendix A, "General Description of the Summit of Mount McKinley.") I shall enumerate the reasons why I feel that he could not possibly have taken it there.

1. The top of Mount McKinley today is exactly the same as it was at the time when Stuck and Karstens first visited the summit on June 7, 1913. There is no reason why it should have changed drastically between 1906 and 1913 and then remained unchanged for nearly 45 years. There was no rock near the top of Mount McKinley at the time of Stuck's climb and there is none today. The closest visible rocks to the summit of the South Peak lie over 100 feet down the south face, and these sharp, angular ledges do not at all resemble the rocks in Cook's picture.

Dr. Cook implies that his picture of the summit was taken at about 10 A.M. on September 16, 1906 (p. 232). It, therefore, would have to be aimed in a southwesterly direction to have the sun coming in at nearly 90° from the left side. His picture would show the *northeastern side* of the summit. When viewed from 150 feet away (the approximate distance that Barrille stood from the camera in Plate 9) this side of the top of Mount McKinley has absolutely no rock whatever in sight. A picture of the north-northeastern side of the true summit taken on July 19, 1942 appears as Plate 19 and shows the final tip of the South Peak seen from the top of the North Drift. This would be not far from the same angle from which Cook's pictures would have to have been taken.

2. The snow conditions in Cook's picture are those of a low Alaskan mountain of 4000-7000 feet. The surface covering of the snow in the foreground and on the nearby rocks has fallen with no wind. It lies in a smooth, even blanket over the gabled contour of wind-drifted snow left in the lee of the little summit after the southwest storms of the previous winter. The snow on and near the true top of McKinley is unlike this and is hard, wind-crusted or sastruginous.

3. Dr. Cook's "summit" picture was taken with the camera rather steeply inclined up the ridge, as the foreshortening of the foreground and figure on top indicates. It would be impossible to take a picture looking up any one of the final summit ridges of McKinley and have *any distant peak* visible in the picture, let alone half way up. Secondly, there is only one big peak that lies southwest of McKinley (17,400-foot Mount For-

PLATE 17

MT. McKINLEY FROM EAST, showing impossibility of direct traverse from East Buttress (left) to Karstens Ridge (right center).

PLATE 18a

SOUTHEASTERN APPROACHES OF MT. McKINLEY. Approximate route of Gonnason Expedition of 1956 is marked. Arrows show lower (5600 feet) and upper (7750 feet) landing strips and highest point reached (11,400 feet).

PLATE 18b

Aerial photos by Washburn.

EAST RIDGE OF EAST BUTTRESS OF MT. McKINLEY. Arrow shows Gonnason party's high point.

PLATE 59

Photo by Washburn, July 19, 1942.

aker). This has, and always has had in historic times, *a domed snow-covered top* which in no possible way resembles the sharp peak visible in Cook's picture. In addition, when viewed from the top of McKinley, even the summit of the North Peak (19,470 feet, the second highest point in the range) lies *below the horizon,* as any nearby summit must when seen from a much higher point. The angle of the horizon when seen from the top of the South Peak would be —2° 19′ if the terrain at the horizon were at *sea level.* If it were higher—and of course it is—this angle would be even less. The angle of depression of the North Peak when seen from the top of the South Peak is —4° 43′ and that of Mount Foraker is —2° 27′. All other mountains are much farther below the horizon. Therefore none of the neighboring peaks rises above the horizon when seen from McKinley's summit. Yet there is no horizon visible above the peak in the background of Cook's picture, despite beautiful weather conditions.

4. The little peak in the background of Dr. Cook's picture is not only not Mount Foraker, it is definitely identifiable as Peak 8450 on the west side of the Great Gorge of Ruth Glacier. By greatly enlarging this part of Dr. Cook's "summit" picture (Plate 9), and then by enlarging the summit of Peak 8450 in Plate 8a an exactly similar amount, one can see that the two peaks are one and the same in both scale and shape (see Plates 10b and 10c). This is possible as Plates 8a and 9 were taken only about 175 feet apart; Peak 8450 is nearly 6 miles away and, therefore, its image is virtually identical on the two films.

Since Dr. Cook's "summit" picture was obviously not taken on the top of Mount McKinley, it remains to be proved where it *was* taken. Through a remarkable bit of detective work, Browne, Parker, Cuntz, and Tucker discovered the "Fake Peak" on June 28, 1910. Parker's "duplicate" of this picture, published opposite page 122 in Belmore Browne's "The Conquest of Mount McKinley," was sufficiently good to convince the experts, but it had two major defects from the point of view of the perfectionist: great snowdrifts hide many of the important details in the foreground, which are free of snow in Cook's picture; the photographer was several feet farther to the right than Dr. Cook, thus changing the near skyline somewhat and moving Peak 8310 into the position which Peak 8450, its neighbor, occupied in Cook's photograph. When Parker and Browne first visited the "Fake Peak," on June 28, it was almost completely buried beneath heavy winter snows (Plate 13a). After attempting the ascent of Mount McKinley, they returned on July 27 and then Professor Parker took the picture published opposite page 122 of Browne's book. The negative of this picture is lost, but an original print from one taken by

Browne at the same time appears here as Plate 10a. (The negatives of Browne's pictures are now on file in the Stefansson Collection at Dartmouth College.)

The negative of Dr. Cook's photograph has also unfortunately disappeared. If it were available, much rock detail in the shadowed ledges below Barrille's feet would doubtless become visible in a good enlargement, and a more precise comparison could be made.

Dr. Cook's friends have never been satisfield with the Parker-Browne analysis of this picture, and the controversy has stayed alive for a half-century largely because of this fact. When Ted Leitzell, of Chicago, visited this location in the summer of 1938 he returned to report that the "Fake Peak" did not resemble Cook's "summit" in any way at all. He was about 80 per cent correct; but the remaining fraction is extremely important historically. I shall now present my analysis, which I believe is as complete as the present condition of this rapidly decomposing little peak will permit.

The 1956 Field Work

The 1956 expedition was a small three-man trip organized to investigate exhaustively the pictures which Dr. Cook took on or around Browne's "Fake Summit," under snow conditions as nearly as possible like those encountered when Cook was in this region. Parker and Browne visited the spot on June 28, 1910 and again on July 27, but on both occasions (and when we were there on March 31, 1955) the winter snow covered most of the rock details shown in Dr. Cook's pictures. In 1956, arriving in the area on August 1, we were prepared to stay a full month, if necessary, to secure the correct snow conditions. I knew from a flight over the region on August 2, 1951 that there was much less permanent snow here than in 1906 or 1910, and for this reason we arrived on the spot a month earlier than Cook's September visit. The relocation of most of the places from which the original photographs had been taken would have meant weeks of painstaking work on the ground, had it not been for the able flying of our pilot, Don Sheldon of Talkeetna (Plates 14 and 15), with whom I first discovered almost all of the locations from the air before we landed to make the duplicates.

As I had become completely convinced that Dr. Cook's picture did not represent the true summit of Mount McKinley, and as I was equally certain that it and Browne's "Fake Peak" were one and the same, our party set out to try to take an exact duplicate of Cook's picture which did not have any of the shortcomings of Parker's and Browne's.

As Don Sheldon succeeded in landing our party only a few yards from the spot where the "15,400-foot" picture had been taken, we had a comfortable camp right in the middle of this interesting and controversial area. It was only a twenty-minute stroll from our tent over to the "Fake Peak" and about two hours to Glacier Point. We, therefore, set out to establish as accurately as possible the position of these points. We measured a short base line and checked their altitudes and the distances between them.

The weather was incredibly bad—not a single really clear day in the sixteen days we spent in the area. However, we did have several brief clearoffs during which we not only did this surveying (with a Wild T-3 theodolite), but also took a number of new pictures.

An exhaustive study of the "Fake Peak" that I made with Read and Albright revealed a great deal of very interesting information. In the shelter of a big ledge just south of its crest, Albright discovered one of Browne's old film-cartons in surprisingly good condition. Then, on the afternoon of August 12, his sharp eyes detected what appeared to be the remains of a small cairn a few feet southwest of the same spot. Beneath a small flat rock in the bottom of this cairn (Plate 16b) he found a note signed by Belmore Browne (Plate 16a). It reads:

> Professor H. C. Parker, Belmore Browne, J. H. Cuntz and Herman L. Tucker visited this spot June 28th 1910 and identified it as the spot on which Dr. Cook took the photo that in his book "To the Top of the Continent" is labelled "The Top of Our Continent. The summit of Mount McKinley, the highest mountain in North America, height 20,300 feet."
>
> Belmore Bro[wne]

This little scrap of paper, 3¼" x 5¾", had been very tightly rolled up, as if around a pencil, and had lain there unprotected for 46 years! It was in such good condition that we unrolled it and read it without damaging it at all. It and the other relics from this trip have been deposited in the American Alpine Club collections.

This discovery, although extremely interesting, was of little real significance, as we already knew that this was the precise spot from which Dr. Cook took the picture shown in Plate 8a. Because of the alignment of ledges in McKinley Cliff (nearby on the left) with points on the ridge in the middle distance, we were able to pin-point to within literally five or six feet exactly where Dr. Cook exposed his picture.

Descending into the little pass which lies a hundred yards east of the top of the "Fake Peak" (125 feet below it), we were utterly unable to

find a place from which the "summit" picture could have been taken. Several of the ledges around the top of the "Fake Peak" closely resembled those in Cook's picture, but they were too far away and too steeply above us to line up correctly with the background. We spent a whole day studiously examining this scene before we suddenly noticed that all of the rocks on the lower two-thirds of the "Fake Peak," when seen from this pass, were yellowish and free of lichens; while all of those in the top third of the peak, *which resembled the ledges in Dr. Cook's picture,* were dark, stained, carried many lichens, and had a heavy accumulation of moss in some of the cracks. Forty or fifty feet of "permanent" snow appeared to have melted out of the area in the last 50 years!

Following this discovery, on the morning of August 2, 1956 we made measurements with a steel tape and then took a photograph, the top of which appears as Plate 1c. This picture was made of the east side of the "Fake Peak" from a point lying as nearly as possible on the line passing from the ledge where Barrille stood with the flag in Dr. Cook's picture, through the spot *in the air* where Dr. Cook stood and extended over to the snowslope about 125 yards east of the peak. This put my camera in a spot about twice as far from the top of the "Fake Peak" as Dr. Cook had been when he took his photograph. Consequently, the relationships, in this scene and in a scaled enlargement of it (see Plate 1c) do not exactly coincide with Dr. Cook's. Also for the same reason, we could not find an accessible spot on the ground at which we could maneuver the background peak (Peak 8450) into its proper position in relation to the ledges which formed the right skyline of the "Fake Peak."

An examination of the right (north) skyline revealed that a large section of the rotten granite ledges which had been there in 1906 and 1910 had fallen away in recent years. In fact, these incredibly unstable granite rocks were falling down almost constantly all the time that we were on this little summit. This situation is most clearly seen in a comparison of Browne's photograph taken on June 28, 1910, north of the snow col below the "Fake Peak" (Plate 13a) and Carter's duplicate of July 23, 1957 (Plate 13b). All of the rocks in the little gully (which once contained the ledges comprising most of the right skyline in Dr. Cook's picture) are compeltely free of lichens and quite different in appearance from the adjacent ledges.

With these facts carefully determined and our photographs in the area completed, we returned to Talkeetna and Boston, realizing two new features of this extraordinary situation:

1. It would be impossible for us to have done any better than we had in duplicating Cook's "summit" picture, as the point from which he took it was at least 40 feet up in the air in August 1956!

2. Even assuming that there was a way to get up to this point in space, it would be impossible ever to make an *exact* duplicate of Cook's picture, as a substantial part of the right skyline is gone forever (and what still remains is going fast).

Analysis of 1956 Evidence

On our return to Boston, we made a number of carefully scaled enlargements of our pictures, and similarly of Browne's and Cook's, using the original negatives for the first two and a copied negative for Dr. Cook's. (Compare points with similar numbers and letters in Plates 1a, 1b, and 1c.) Even though the angular relationships between these pictures were markedly different and the snowdrifts in each varied greatly, a few basic facts were apparent. Our picture and Browne's were easily identified as being of the same subject because of a number of identical rocks and cracks which are still clearly visible, despite the great difference in snow cover. The peaks in Browne's background are not visible in ours because of the different distances from which these pictures were taken. The right skyline of Browne's picture appeared to be almost completely gone in 1956, *but* the big crack (1), which can be so clearly seen descending almost vertically below the tip of the "Fake Peak" in Browne's picture (Plate 1b), is identical to the *right upper skyline* in ours. *It was along this very crack that the major fracture, changing the right skyline, had taken place.* A dashed line shows where the ledges have broken away.

We now compared the enlargement of the upper part of Dr. Cook's picture (Plate 1a) to the scaled enlargement of Browne's. It is clear that very few of Cook's features are visible in Browne's because of the heavy snow cover in the latter. However, four vitally important similarities can at once be seen. Note the sharp ledge F on the right skyline with two telltale bumps of rock right above it. In addition, note the diagonally slanting ledge, K, the sloped ledge J, and the fact that the basic contours of the summit beneath the men's feet are the same. That Cook's picture was taken from a lower position than Browne's may also be clearly seen from E, which barely juts above the ridge on which F occurs in Cook's picture, but shows more clearly in Browne's. The distant peaks in Browne's picture (see Plate 10a) are badly out of position, as the *central* one of the three (Peak 8450), not the left one (Peak 8310), resembles the sharp summit in the right margin of Cook's picture.

The similarities were sufficient to convince the experts of 45 years ago that Cook's picture and Browne's were taken from the same place. The existence of Browne's unretouched negative is vitally important in this analysis. It is not identical to Professor Parker's, which was originally published opposite page 122 in Browne's book, but it was taken from almost precisely the same spot and belies the assertions of Dr. Cook and his friends that Parker's picture was retouched in order to make it resemble the Doctor's picture. Parker's photograph was indeed slightly retouched, but not altered in any significant way.

The similarity between Cook's "summit" picture (Plate 1a) and our 1956 picture is positive, despite the angular differences, the absence of snow, and the dramatically changed right skyline. Note especially the left skyline rocks A and B, the big rounded boulder H, ledge J, and sloping ledge K.

It is truly unfortunate that Dr. Cook's negative is lost, as cracks and minor ledges could be compared, in addition to major rock masses and platforms. However, the basic details in all three of these pictures agree as precisely as in a fingerprint, and the identity of the little peak in the lower right corner of Dr. Cook's picture is firmly proven by the analysis already described and illustrated in Plates 10b and 10c.

These pictures were all taken in the late morning. Barrille was not even standing on the true top of the "Fake Peak," but on a little promontory 25 feet to the east of it and eight feet lower!

Although the 1956 pictures present conclusive evidence of the location of Dr. Cook's "summit" picture, *they did not duplicate Cook's scene.* By means of painstaking calculations, I estimated the point *above which Dr. Cook stood when he took his picture* to be 42-45 feet up in the air *in August, 1956.*

*The 1957 Expedition**

This investigation so intrigued me that I decided to try to make as exact a duplicate of Dr. Cook's "summit" picture as possible during the summer of 1957. We secured the loan of a Crown Graphic camera from the Graflex Corporation of Rochester, N. Y., this time with a 127 mm. (5.0") lens, producing on a 4"x5" film almost the same result as did Dr. Cook's photographic equipment. The Aluminum Company of American contributed 50 feet of 2½" aluminum pipe after Peter Hunsaker of Arthur D. Little Company had calculated the ideal physical requirements for a mast up which a man could climb. We drilled holes at 20" intervals to hold the 30 foot-long rungs made of ½" aluminum pipe (see Plate 11b).

*This section was written by Adams Carter.

On July 19 and 20 Don Sheldon flew our party of ten to the tributary of Ruth Glacier near the base of the "Fake Peak." Our group consisted of my wife Ann, our 13-year-old son Nat, Roger Dane and his wife Lee, Douglas Bingham, Francis Blake, Jr., Harold Boeschenstein, Jr., James M. Estabrook, Jr., Barrett Morgan, and myself. In the eight days we were in the area we did not have a single really clear day.

We assembled the five sections of the mast with standard pipe-couplings and fixed the rungs in place with cotterpins. After attaching climbing ropes for guys to the top of the pole, as well as two-thirds and a third of the way up, and after fixing pitons in rock and ice, and wooden stakes in the snow at four points equidistant from the base, we were ready to raise the mast. With two people at each of the four guying stations, one footing the mast at its base to keep it from slipping out of the hole chopped in the ice for it, and the last pushing first directly on the mast and then with a 20-foot Y-ended aluminum push-pole, it took all of us to raise the teetering shaft. As it swayed first this way and then that, we wondered if we could hold it upright, but with a quick shout to one station to pull harder and to another to slack off, we finally brought the mast to the vertical. After fixing the tower roughly, we set about guying it tight, using as turnbuckles parachute cord from snaplinks on the pitons to snaplinks on the climbing rope-guys. It was a delicate and painstaking business which took seven hours from the moment we first started to raise the mast until it was securely enough guyed to hold the weight of a man. Roddie Dane climbed to the top with a Polaroid camera to snap a picture which showed that the tower was too close to the summit of the "Fake Peak." We retreated into camp in the rain.

The next day, still in murky weather, we returned to lower the mast. We completed this nerve-wracking task without either dashing the pole to bits on the rocks or knocking anyone off his precarious perch. Raising it in the new position took much less time than before, but cloudy weather precluded any photography.

July 23 dawned gloriously clear. A Polaroid shot confirmed our fears that the tower was not yet in perfect position. It was amazing what a difference there was between pictures on the right and left side of the mast. All hands were called to lean the pole so that its top was some 18″ to one side and to re-guy it. By late morning we were ready to take the "summit" photograph. It was none too soon, since clouds were beginning to gather. However, the photographer's perch proved to be not high enough. Fully *ten vertical feet of solid ice had melted away from the base of the "Fake Peak" since 1956,* thus making the top of the 50-foot pole (sunk one foot in the ice) only about 39 feet net above the snow-level of the year before.

Our picture (Plate 1d) immediately shows the great angular advantage of taking this picture from a point very close to Cook's original position. Because of the insufficient height of the camera, the ledges around the top of the peak are unfortunately in little better relationship to each other than the picture of the previous year, but *Peak 8450 appears in its proper position on the right, as expected.* The distance from the camera on the top of the pole to the man holding the flag (where Barrille stood) was 153 feet (direction exactly southwest magnetic).

In order to produce a perfect duplicate, the mast would have to be about 10 feet higher—some 5-10 feet more than originally estimated. Furthermore, it would have to be moved a bit farther away in order to maintain the correct relative position of Peak 8450.

Before leaving the area we visited Glacier Point and again duplicated Cook's pictures taken there, using our camera with its more appropriate proportions. We also secured other interesting duplicates of pictures taken by Browne in 1910, which show the great amount of melting which has taken place in this valley in the last half-century (Plates 13a and 13b). It is hard to determine when this process started, as it could have taken place in only six or seven years if melting like that encountered in the unusual period August 1956 to July 1957 had been typical!

It is regrettable that we did not have the foresight to equip ourselves with at least 20 feet of extra mast to meet an emergency of this sort, but, frankly, we never dreamed that melting such as this would take place when 46 years had elapsed since the snow was only 50-60 feet deeper. However, the mast is cached nearby, and someday another party of topographic detectives may retrieve it and finish the job once and for all—but they had better hurry, as the famous little "Fake Peak" is fast disintegrating, and it will not be long before its countenance of 1906 will have completely and irretrievably crumbled away.

*Conclusion**

As the years go by, there is little doubt that still more facts will be added to this extraordinary story. The sites of two of Dr. Cook's pictures are still unlocated. Since September 1906, nobody has succeeded in taking a photograph from precisely the same spot where Dr. Cook stood when he exposed his fateful "summit" picture.

However, it now seems as if the vast majority of the facts have been determined and the true location of the basic pictures discovered. No case has ever gone to court in which all of the evidence was amassed or pre-

*By Bradford Washburn.

sented by either side. Dr. Cook's story has always bordered on the incredible and the impossible with regard to its geography, equipment, and timetable. The experience of the two participants, also, was less than marginal for an exploit of this magnitude. The amazing length of time that Cook's supporters have continued to stand by him despite all of this adversity is probably due more to the bitter attacks of Peary and his followers than because of any inherent strength in Cook's own story. Americans always seem to rally nobly around an underdog at bay, and nobody ever likes to face the facts of a gigantic lie or hoax.

This history is sobering testimony to the old adage: "The truth will always out." It probably seemed beyond belief to Dr. Cook that anybody would ever revisit his insignificant little "summit," lost as it was amid the vast complexity of the Alaskan wilderness. It must have been a staggering shock to have it discovered in only four years. And I wonder what he would have thought if he could have heard of the extraordinary efforts to which Carter's party went in its pursuit of the whole truth last summer!

In conclusion, I should like to quote Claude Rusk of the Mazamas, who wrote the following words at the end of his expedition up the great Ruth valley in the summer of 1910 (Claude E. Rusk, in the *Pacific Monthly*, January, 1911, pages 61-62):

> Dr. Cook had many admirers who would have rejoiced to see his claims vindicated, and I, too, would have been glad to add my mite in clearing his name. But it could not be. As he sowed, so has he reaped. If he is mentally unbalanced, he is entitled to the pity of mankind. If he is not, there is no corner of the earth where he can hide from his past.

APPENDIX A

General Description of the Summit of Mount McKinley

In recent years, a detailed and accurate map of the summit of the South Peak of Mount McKinley has been completed as a result of extensive ground surveys and stereoscopic aerial photographs. While in 1906 nobody but Dr. Cook claimed to have reached the summit of Mount McKinley, now no less than 12 successful ascents have been made and 54 persons have reached the top. Although in 1906 the topography of the summit was unknown except for what one could see through a telescope, today its details are common knowledge to a considerable number of people whose visits, scattered over a period of 44 years, have yielded a vast amount of detailed factual information about the mountain and the whole region around it.

The actual summit of the South Peak (20,320 feet) is not a sharp point when seen at close range. It consists of an almost level, narrow ridge of extremely hard-packed snow about 70 feet long and trending northwest-southeast. There is a little windswept hollow a dozen feet deep at the northwest end of this ridge, just north of which rises another drift almost as high as the true summit (the North Drift). The summit seen from the top of the North Drift is shown in Plate 19. This drift appears to be the summit when viewed from the vicinity of Denali Pass and the region about the Archdeacon's Tower. From it a short, steep ridge falls a few hundred feet southwestward to Kahiltna Horn (20,100 feet approximately) and another drops more gently to the north and then northeast toward the domed shoulder of Farthing Horn (20,125 feet), the highest point reached by the Parker-Browne party on June 29, 1912. A third ridge drops from the true summit toward the southeast, first gently over icy drifts to the sharp little snow peak known as Carter Horn (20,220 feet), then with ever-increasing steepness to the great ledges overlooking the head of the South Buttress.

The northeastern and northwestern approaches to the summit are almost totally buried under a deep veneer of perpetual snow, usually packed to icy hardness by the wind. Only two very small rock outcrops exist on this side of the top, one just northeast of the peak of Carter Horn, the other a short distance down the domed snow ridge leading from Farthing Horn toward the Archdeacon's Tower.

The southern face of the true summit is a fantastic 10,000-foot slope of granite and ice, dropping to the head of Kahiltna Glacier's eastern forks in barely one horizontal mile. The only rock adjacent to the summit of the South Peak is granite, which is occasionally marked with huge zenoliths or inclusions of the black slate or schist which is the dominant cap-rock of the North Peak. The nearest rock to the summit on this side is 100 feet or more down from the top of this very steep slope.

There is no rock of any sort *on the top of the South Peak* nor within several hundred yards of it on the surface, except on the south face, because the granite underlies a mantle of solid snow, possibly 50-75 feet deep. *This situation has not changed in any way* since 1942 and there is no reason to believe that any major change in the configuration of the summit has taken place for a great many years. Today it is exactly as Archdeacon Stuck describes it as having been when he visited it on June 7, 1913.

An eight-foot bamboo pole was set in the exact top of the peak in 1947 and revisited in 1951. In the four intervening years its base was about a foot northeast of the same spot, and the pole was canted at a slight angle toward the northeast by the constant blast of the prevailing southwest winds. When

re-photographed by the Thayer party in 1954, this angle was a bit greater, but the pole was not buried deeper in the surface ice, which had originally been cut away about a foot in order to make a firm base in which the pole was frozen with water.

There is therefore reason to believe that the entire summit snow mass with the pole in it may be moving extremely slowly to the northeast. Efforts are being made to preserve the pole and to photograph it at intervals in order to ascertain if there is any such movement—probably so slight that at least ten years will have to pass for it to be very noticeable. No difference in snow-cover of the summit appears to take place throughout the year, and no melting could possibly occur on the top of the South Peak, except under fantastic weather conditions. Even in the warmest summer weather, the daytime noon temperatures on the peak rarely creep above 0° Fahrenheit. They must average better than 20 below zero on almost every summer night.

The true summit of the South Peak can be a very elusive object to the surveyor. It is only surely discernible from the east and west, and even from these points the little level summit ridge makes precise intersections almost impossible, unless one can see the marker pole used for sights up to above 15 miles away since 1947. From the south and southeast, Carter Horn appears to be the true top, until one is at least 30 miles away from the mountain. From the west and northeast, Kahiltna Horn similarly appears to be the highest point until one is a long distance away from the peak, or viewing it from a considerable altitude.

APPENDIX B

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Mount Logan—East Peak

DAVID A. COLLINS *and* GILBERT J. ROBERTS

THE airdrop of supplies at the foot of Mount Logan, North America's second highest mountain, was the most thrilling bit of flying we had ever experienced. In two flights with a Yakutat-based Cessna 140 we skimmed over the surface of Hubbard Glacier and dumped out most of our 40-day food supply at 7200 feet elevation, just two miles below the end of the East Ridge. With three more flights in a ski-equipped Super Cub the five climbers, together with more food and equipment, were deposited eight miles farther down the glacier ready to make the first full-scale attempt on Logan from the east.

The beginning of our operation in this age of airdrop was a far cry from that of the 1925 expedition which made the first ascent of Logan, from the west. In one of the great efforts in mountaineering history that group—Lambart, MacCarthy, Carpé, Foster, Read, Taylor, Hall, Morgan—succeeded in getting the first six to the central summit. Their ascent, by the long ridge from King Col, was possible only after months of effort which included relaying loads by dog sled in the cold Yukon winter. On the return from the summit the party was nearly overcome in a terrible storm which they survived only through a tremendous effort of will. Every man was frostbitten in the two days out from their highest camp. (*AAJ*, 1933, 2:1, pp. 69-86.)

In 1950 that first ascent route was repeated by two separate parties which reached the central summit within nine days of each other. Norman Read and André Roch were the first party; Gordon Herried, Mark Christensen, and Alston Paige the second. (*AAJ*, 1951, 8:1, pp. 191-2; 1952, 8:2, pp. 364-7.)

Then, in 1953, McGowan, Mohling, Miller, Kelley, and Long scouted the eastern aspect of Logan in the hope of finding a new route. They did find a promising ridge leading to the 16,000-foot summit plateau beneath the unclimbed east peak; however, Long had to be evacuated with appendicitis before they could give it a try. The remaining members were able to reconnoiter this ridge to about 10,500 feet; and about 10 days later made the first ascent of Mount Cook. To that expedition we were indebted for a great deal of valuable information and excellent photographs which were most helpful when we went to the same area. (*AAJ*, 1954, 9:1, pp. 32-38.)

The last week of June 1957 saw five of us gathered in Yakutat, Alaska. Don Monk, from Danville, California, was a graduate student of mathematics at the University of California; Kermith Ross lived at China Lake, California, and was a patent attorney for the Navy; Cecil Ouellette, of Yakima, Washington, recently discharged from the mountain troops, was preparing to study geography; Dave Collins had been doing graduate work in engineering at the University of Washington after a tour with the Navy Civil Engineer Corps; Gil Roberts was a medical student at Stanford Hospital in San Francisco.

This expedition did not take full shape until a few weeks before departure. Collins and Roberts had done much letter writing for many months, but were still short-handed. Fortunately, Monk and Ross, who had been considering a similar venture, offered to join forces. Unfortunately, Frank Tarver, another original member of the party, broke his leg just four days before departure after he had spent many days in Seattle buying and packaging food. Only Don and Kermith had climbed together previously; they had been with a Sierra Club group in the Mount Wood area north of Logan a few years before. Dave also had experience in the North: he had been up Mount McKinley with the successful 1953 expedition. As no leader was chosen, all decisions were the result of group discussion, and vote when necessary, a system which proved thoroughly satisfactory.

At Yakutat, on the Alaskan coast about 80 miles (as an intrepid crow would fly) south and a bit east of Mount Logan, which is in Yukon Territory, we became better acquainted during the usual three-day wait for flying weather. The gear, which had been air freighted from Seattle, was quickly reorganized. Everything was here: five tents of various design (including two Makalu tents loaned us by the California Himalayan Committee), our vibram-equipped Korean boots (unexcelled for Alaskan mountaineering), snowshoes, pitons (rock and ice), rappel pickets, and so on into the many dozens of items necessary for living and climbing in such a remote glaciated area. Finally June 25 dawned a luscious day and we made the airdrop flights near the base of East Ridge, while the members of the party were landed farther down Hubbard Glacier with the ski plane. Next morning the plane was flown in with one more load of food and equipment; then we were left in isolation and close communion with this beautiful, heavily glaciated St. Elias Range.

The two days after our landing were spent collecting gear and hauling it up through an easy icefall to the base of the East Ridge, where Camp One (Base Camp) was set up. Our aluminum ski sled, fabricated by Ross, was similar to one used by the 1953 party, but with the addition of a sturdy

push-bar, which was a big help in stabilizing it on traverses. This sled was of tremendous value on the glaciers under the mountain and later on the long walk to the coast.

Just above Base Camp came our first big problem—to get our hundreds of pounds of food and equipment up extremely steep slopes and onto the ridge. Brought along for this special purpose were some aluminum sheaves and a 2000-foot coil of manila rope which was also used for fixed ropes higher up. After Cecil and Don climbed the steep rock at the base of the ridge, we rigged an A-frame and pulley system from the crest down extremely steep ice for 400 feet to easier slopes which we could climb with loads. For two days we repeatedly loaded the sled, threaded through a crevasse pattern, backpacked the loads to the bergshrund which marked the transition to steeper slopes, and hauled for all we were worth to get them to the crest.

During the hauling operation Don and Cecil (before he rapelled down to help with the pulling) used a small tent platform near the A-frame, christened Camp Two, but soon after we had all gained the ridge we moved about 500 feet higher to a larger perch, Camp Three, a little under 9000 feet. This was to serve as our big supply dump and Advance Base.

On July 2 we carried loads about six hours up the ridge to Camp Four, at about 11,000 feet. This portion of the ridge was loose and exposed, but not technically difficult. Still, a couple of fixed ropes were deemed advisable. Our policy was to be "rest days are storm days"; and on July 4, after another day of relaying loads, we got our rest while a dilly of a storm plastered the mountain with plenty of powder snow. Three of us were in Camp Three and two in Camp Four. Kermith and Dave made a reconnaissance above Camp Four during one lull, but it was the evening of the 7th before the three below could move up with the last loads to Camp Four. The storm continued next day, but one trip down to Camp Three was made to replace a stove that had gone over the side. July 9 continued in a stormy vein, but everyone finally set out with loads and the weather cleared in the afternoon.

Climbing above Camp Four was much more difficult. Dave and Kermith had used ice pitons in the initial trip up, but located relatively easier routes coming back. The south side of the ridge presented steep rotten rock with patchy snow and down-sloping slabs. The north side was primarily high-angle ice. We left several fixed ropes and stayed close to the crest except for one traverse out onto a series of ledges on the south face of the ridge. At 12,000 feet Kermith and Dave had placed a cache in two trips to this point. Above that the ridge was a knife edge of ice for about 350 feet with 4000-

foot drops to the upper Hubbard on either side. As we were in shadow this late in the day, a cold wind really numbed us as Kermith and Cecil went ahead to cut steps suitable for men with 40- to 50-pound loads. Finally we reached a broad portion of ridge in the lee of a large ice cliff and established Camp Five at about 12,300 feet. After some hasty platform digging we all hurried down to warm up.

By July 11 everyone was established with supplies in Camp Five, and the route above had been scouted for about 1200 feet. The next day we got about two hours farther up the ridge, but were forced to cache our loads and retreat when what had looked like a minor flurry of snow and mist took a turn for the worse. Snow and high winds held us in Camp Five for three days. By now we were out of reading matter, and efforts were directed at new culinary delights. One, the "Logan TV Breakfast," had 20 or more ingredients and was without doubt the worst thing any of us had ever eaten in the mountains.

On the 15th the weather cleared again. We decided to make our moves from camp to camp in one day with double carries to avoid being stranded above or below our main supplies with deep snow between, and to avoid the drifting-in of steps between trips. In carrying out this plan we made two carries to Camp Six, situated in a rather exposed position on the lower lip of a crevasse at about 13,500 feet. The route from Five to Six involved some steep ice-covered slabs where more fixed ropes were placed, then a narrow ridge covered with snow which the advance party removed in about an hour of shovel-work. Above 13,500 feet the ridge began to widen and ultimately merged into the face of the 15,500-foot dome, which was the highest point we had been able to see on the mountain. Steep snow slopes, with crevasses and avalanche worries, now supplanted sharp rock and ice ridges.

One false start of 200 feet above Camp Six ended on the wrong side of a large crevasse. Removing our tubular aluminum rappel pickets and fixed line, we tried again; and after a traverse to the south, below the crest, and a few more problems in a small ice fall, we established Camp Seven on the face of the dome a bit above 14,000 feet. Now we were almost even with unclimbed McArthur Peak across the way. On the way down for more loads we had our only real avalanche scare. Where we traversed below the crest the slope avalanched to a depth of three feet. One man was swept off his feet, but scrambled to safety even before the rope went taut to his rope-partners above the fracture line. Still, the avalanche was impressive as it swept down the face and out onto the glacier 6000 feet below. We had observed dozens of avalanches on the faces around us during our three weeks in the area, but this one took on a special significance.

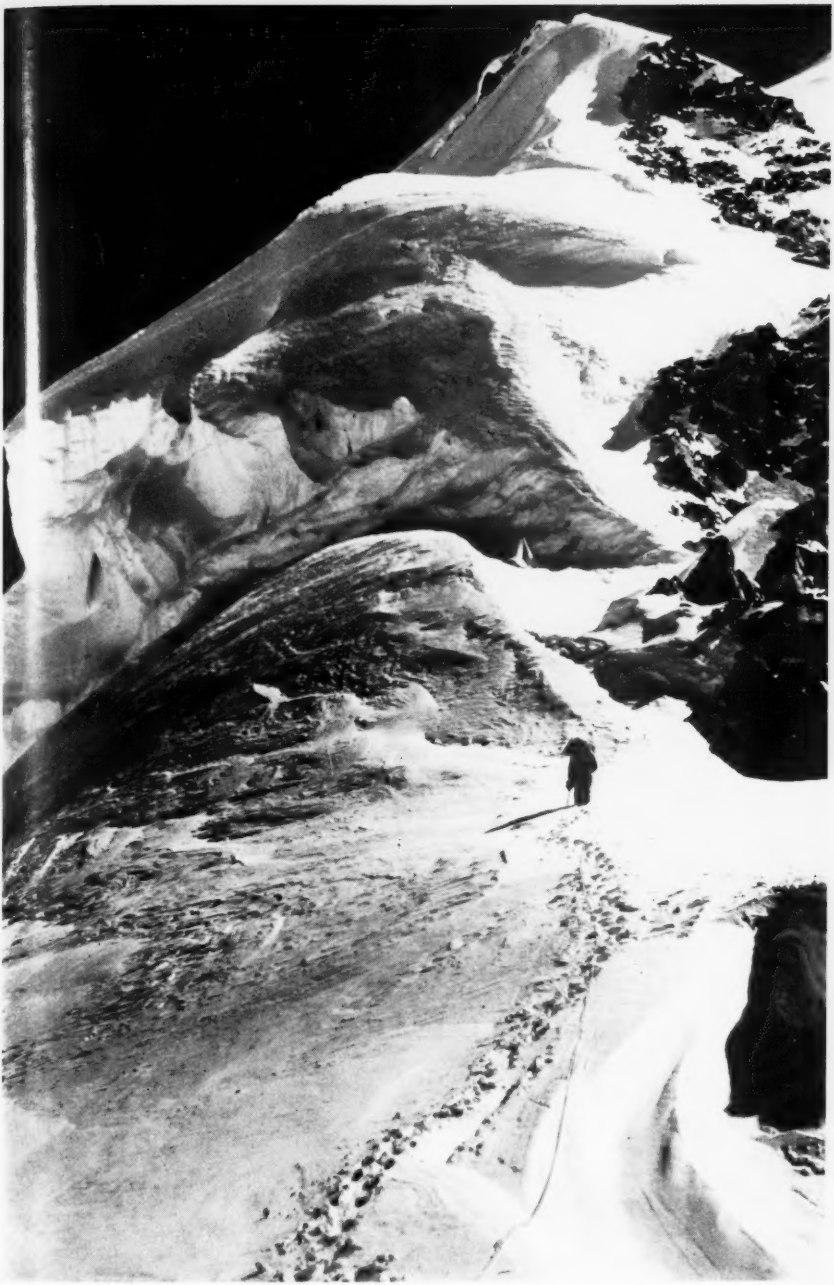


PLATE 20

Photo by Gilbert Roberts.

EAST RIDGE OF MOUNT LOGAN.

Showing Camp 5.

PLATE 21

Photo by Bradford Washburn, 1938.

NORTHERLY SIDE OF MOUNT LOGAN, showing the three summits from the air above Logan Glacier.

PLATE 21 NORTHERLY SIDE OF MOUNT LOGAN, showing the three summits from the air above Logan Glacier.

PLATE 22

Photo by Bradford Washburn, 1938.

SOUTHERLY SIDE OF MOUNT LOGAN, from the air above Seward Glacier.

Camp 6
Camp 5
Camp 3
Camp 1
(Base)

We made two carries over the dome to establish Camp Eight on the 17th. The route lay mostly on high-angle snow, both hard and soft, with some traversing to avoid crevasses and avalanche slopes. It was a great day! We got our first look since we landed on Hubbard Glacier at the unclimbed East Peak. Set back several miles from the edge of the plateau, it had been hidden from us until now by the dome on which we stood. Below, only the higher peaks could be seen piercing a layer of cloud; Lucania and Steele were prominent to the north. Camp Eight was the first site where we did not have to level out a platform. Next morning the weather was discouraging, but with heavy packs we slogged on in mist and snow. Soon we were in the lee of a small peak and the drifts were thigh deep. At 3 o'clock we decided we had gone far enough, and Camp Nine was placed in a huge basin at 16,000 feet, about two miles from the base of the East Peak. The weather looked bad, but we were prepared to wait for five days if necessary. Our plans for a midnight start were called off, but by 9 o'clock in the morning the weather had improved enough to justify a summit try.

So on July 19 we headed with great enthusiasm for the southeast ridge of the East Peak, still slogging in deep snow, but making better time without packs. Below the ridge an ice slope required us to use crampons. Once on the ridge the climbing was on hard snow with occasional islands of rock through which we easily threaded. Moving upward, we came into view of the mighty peaks of the St. Elias range—St. Elias itself, off to the southwest, now below us. The wind became stronger and colder and we put on down jackets with parkas over them.

At four in the afternoon all five reached Logan's East Summit. Stepping gingerly at first and belaying until the cornice seen from below had been investigated, we were soon milling about in a mess of "rope salad." We shot pictures with complete abandon and tried to decide which of Logan's peaks was the higher. The Central Peak about two miles away had been climbed on the three previous ascents. Sighting with an ice axe did not solve the question. In the end we were pretty much in agreement with others that the two peaks are very, very close in elevation, with the Central Peak perhaps slightly higher. The long ridge dropping to 18,000 feet or so and then rising to that peak was tempting, but we were already out on a long limb. The weather had been good for too long and clouds were rising. We did not ever seriously consider carrying one or two more camps over the East Peak; we were happy to be where we were. One camera shutter froze as we were admiring and photographing the grand panorama. All too soon we were forced to begin the long descent.

On the way down we made good time, glissading now and then. We reached Camp Nine at 7 o'clock. None of us had felt the altitude particularly, but all were very tired and thirsty. The temperature was —11°F as we began melting water for soup.

Next morning everyone moved in slow motion, for the last five days of heavy going were beginning to tell. Eventually we broke camp and started down, leaving our Logan tent where it stood full of items we could now do without. Soon, heavy mist enshrouded us and we were most thankful for the flagged wands we had placed on the way up. We descended, pausing just long enough to reclaim personal gear and eat any particularly tempting food. We were all extremely hungry for protein despite an adequate supply of food on the ascent. Poor visibility and drifted powder snow caused crevasse problems. Between camps Six and Five the lead man suddenly disappeared from view, but was soon extricated. The fixed ropes still in place made the descent faster and safer in several places. The tent we had left at Camp Five had not fared very well in our absence, but it was soon dug out and added to a load. It was a great relief when the sharp ice ridge below Camp Five was passed. On that we made it all the way down to Camp Four and ended the day with an enormous meal.

Next morning, July 21, we continued down the rock ridge. There was less snow here now and more trouble with loose rock. In some places we had to move one at a time until all were out of range. Camp Three with all the canned goods almost stopped us—ham, sardines, peanut butter, honey, roast beef, canned fruit, etc., were the principal reasons. Late in the afternoon we pushed on and, heavily laden internally and externally, made the final 400-foot rappel off the ridge and over the bergschrund into a thick mist; thence on down to Base Camp.

A heavy snowstorm held us here for a day and a half, but the rest was welcome. When the wind eased a bit, we meandered down the icefall, making many detours around crevasses in the one-rope-length visibility. At the foot of the icefall we played "cache, cache, where's the cache." Two groups set off on different bearings and one hunch luckily paid off, so that the full day of effort got us two miles into Airdrop Camp after all. In the morning things cleared somewhat so we could see that behind us the East Ridge was covered with white—luck had been with us in getting down before this last storm.

Roughly 90 miles lay between us and the coast as we started down Hubbard Glacier July 24. Traveling on snowshoes and pulling our loaded sled, we made about 15 miles to the base of Water Pass, which would take us over the Logan-Vancouver ridge and onto Seward Glacier. From Water

Pass next day we viewed St. Elias again across the broad expanse of Seward Glacier, and our own East Peak of Logan emerged from the clouds above us. Then we traveled on into the night and the fog closed in. We had to find our way by compass across the seemingly interminable Seward névé toward Seward Trough, a fanstastically broken channel of ice where Seward Glacier funnels down to Malaspina Glacier. Late in the afternoon of the 26th we heard rock falling; our voices echoed off something close to our left —Cook Nunatak. We were right on course. Next morning the fog began to lift and we started threading our way through the crevasses at the entrance to the Trough. These crevasses were the biggest any of us had seen, and we were most careful to use only very well-supported snow bridges. For a time an unbroken surface presented itself—we almost took to flight. Farther along, below Point Owen, we found the Trough too broken to permit travel. From there on we went along the left-hand margin through little bays of dead ice and up and down over intervening ridges, each of which meant unloading the sled and carrying again. Still, these ridges had flowers, heather for beds, and running water—all very welcome indeed after the barrenness of the country we had been in for over a month. At Point Glorious we had our first contact with civilization since the landings on Hubbard Glacier. At this point a Yakutat pilot, who had been wondering where we were, spotted our signal mirror. He buzzed our lunch spot and we signaled with a victory symbol that all was well.

Where the Seward broadens out to feed the 50-mile-wide Malaspina Glacier, we passed between Seward Rock and the Hitchcock Hills to reach the level of the Malaspina on the evening of July 29. Traveling on a bearing of 150 degrees magnetic, we made for the coast 35 miles away. Halfway out across this vast wasteland of dirty ice, moraines, and pressure ridges, we abandoned our sled, as we had been doing all along with bulky or heavy unneeded equipment. We continued the up-and-down course, only getting high enough to see the ocean a couple of times during the day, and by evening of the 31st we could hear the surf. Now, with the bottom of the food bag showing, we faced the biggest problem of the entire walk-out. A system of lakes and channels paralleled the beach for many miles in both directions, presenting an intimidating barrier. On the flight in we had seen a corridor through the lakes; now it seemed to have disappeared. The thought of miles of moraines and ice hills covered with sliding detritus leading around the obstacle was oppressive. A diligent search in the second day finally produced a roundabout route. It involved much iceberg-jumping, a swim on air mattresses, a high line for equipment, and, in one stretch, running along a chain of small bergs fast enough so that none had a chance to

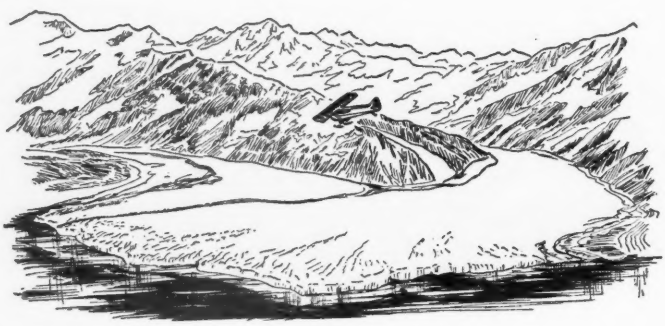
sink. On the morning of August 2 we reached our pick-up point at a beach near the *Satsuma Maru,* a 60-year-old Japanese wreck, whose three masts still protrude from the sand. It was only a few hours before two Cessnas landed on the beach to bring to an end our thoroughly successful mountain adventure, except for a last view of Logan rising magnificently across Yakutat Bay.

Summary of Statistics

AREA: St. Elias Range, Yukon Territory.

ASCENT: Logan, first ascent of East Summit, July 19, 1957.

PERSONNEL: Kermith Ross, Don Monk, Cecil Ouellette, Gilbert J. Roberts, David A. Collins.



Glacier Studies in Alaska, 1957

MELVIN G. MARCUS*

UNTIL recent years, glacier studies by American scientists have been concentrated in the Southeastern Alaska region. Members of the American Alpine Club have followed these activities with some interest and many members have participated in research projects. In the past decade, there has been a shift of public and scientific interest to the more remote polar glaciers of Greenland and Antarctica. This has been particularly true during the current International Geophysical Year. The investigation of temperate alpine and piedmont glaciers remains, however, an important and vital phase of this international program.†

As in the past, considerable attention is being concentrated on the numerous glaciers in Southeastern Alaska. A fairly continuous program of glacier studies has been maintained in this area and some records date as early as the late 19th Century. Present studies, therefore, bring earlier records up to date and provide a continuity of observation that may eventually yield a greater knowledge of the nature and behavior of glaciers. Also, expeditions are attracted to the region because of its accessibility. A large number of glaciers, many investigated in the past, are easily reached by boat. Field personnel need only leave their craft for short periods of time in order to photograph and measure the glacier fronts. Glaciers and ice fields associated with the more recent projects are usually only a short hop by ski- or floatplane from major Alaskan cities.

Four field parties studied glaciers in Alaska in 1957. Although the activities of these groups were widely divergent, nevertheless they all sought greater understanding of glaciers and their physical and biological environments. The differences in immediate objectives, however, necessitate a separate discussion of each project.

Project 4.11

This project has as its primary objective the preparation of large scale (1:5000 and/or 1:10,000) maps of nine selected Alaskan glaciers. Glacial

* The writer wishes to express his thanks to Charles C. Morrison and Calvin J. Heusser for their help in providing information for this article.

† See "Glacier Studies During the International Geophysical Year," by Richard C. Hubley, *A.A.J.*, 1957, vol. 10, No. 2 (Issue 31).

surfaces and valley bottoms will be mapped at a contour interval of two meters. In some instances it will be possible to plot one-meter contour intervals for more accurate portrayal of glacial features. Since air photogrammetric methods are being supplemented by ground photogrammetry, the results should be extremely precise and accurate. It is expected that this precision will be particularly valuable if future studies are effected on the same glaciers. Later mapping of similar quality will, for example, provide means by which changes in glacial mass and configuration may be accurately computed.

This is the first time that Alaskan glaciers have been mapped at a large scale. Although nine glaciers were selected, only three were surveyed in 1957. These were Worthington Glacier near Thompson Pass, Polychrome Glacier in Mt. McKinley National Park, and West Gulkana Glacier in the Delta River area. Work was partially completed in the Nizina region of the Skolai Mountains and on Salmona Glacier of the Kenai Peninsula. Selection of the remaining glaciers is tentative; but size, location, and accessibility will influence the final decisions. At least one more summer will be required to complete the field work. Meanwhile, field data is being plotted at the Institute of Geodesy, Photogrammetry, and Cartography at Ohio State University by James B. Case. The final maps will be drafted at the American Geographical Society.

Juneau Ice Field Research Project

The Juneau Ice Field Research Project completed its ninth year of glaciological and related studies during 1957. Research for the fourth consecutive year was carried out mainly on Lemon Creek Glacier, one of the stations in the North American Glaciology Program of the International Geophysical Year. Studies were conducted during two observation periods, the first lasting from 5 to 17 June and the second from 1 to 16 September. A total of six men participated. The Jamesway Hut research station at the head of the glacier was again occupied and a ski-wheel Super Piper Cruiser assisted in transporting equipment and personnel to and from the campsite.

The project's four main objectives were to (1) determine the hydrological budget of Lemon Creek Glacier; (2) determine the three dimensional field of motion over the glacier surface; (3) reconstruct the variations in size of the glacier during the last several centuries; and (4) maintain the photographic record of the margins and firn lines of the Lemon Creek and related glaciers. The latter included photographic coverage of the Lemon Creek, Mendenhall, Herbert, Eagle, Gilkey, Norris, Taku, Hole-in-the-Wall, and East and West Twin glaciers. In addition, U. S. Navy air-

craft photographed Lemon Creek Glacier for purposes of mapping. A final map of the glacier will be drafted at Ohio State University this year.

It is believed that the 1957 field party set some sort of record for operational efficiency on a project of this type. All of the rather imposing list of objectives were accomplished during the relatively short, split field-season. There was, in fact, sufficient time remaining to enlarge upon the scheduled program. Since such complete success is uncommon, it is worth mentioning some of the contributing causes. A long stretch of clear weather in June undoubtedly increased field effectiveness, but this was balanced in September when only four days were considered adequate for normal field operation. It was possible during periods of bad weather, however, to pursue phases of research that did not require unobstructed visibility. The usual risks of glacial travel under low visibility conditions were greatly reduced by familiarity with the terrain, frequent use of trail markers, and the fact that it was never necessary to travel more than a few miles from camp. Furthermore, the existence of a nearby dry hut offers greater inducement to storm travel than does a waterlogged tent-camp. The presence of the hut and the small size of the party (never more than four men in the field) also reduced the logistical problems that so frequently plague scientific as well as mountaineering projects of this type. Finally, it should be noted that all of the personnel were competent mountaineers and no time was lost in training. Since the project was operating under optimum conditions, born of eight years experience in the same area and a wealth of equipment, it seems unlikely that such success can be easily duplicated in an unfamiliar region. The experience does, however, indicate once again some of the advantages inherent in a small, well-trained party following a carefully planned program.

The final year of the Juneau Ice Field Research Project is planned for 1958. A full summer field season is expected and the current sequence of observations on the various glaciers will be completed. In addition, a Juneau to Skagway traverse of the Ice Field is planned for the purpose of gathering ecological, glaciological, and geological information.

Project 4.2

Project 4.2 is a reconnaissance survey of numerous accessible glaciers in Southeastern Alaska, particularly those that have been studied previously. In 1957, the field party of seven examined 15 glaciers (Portage, Oxyria, Raven, Spencer, Bartlett, Trail, Black Rapids, Cantwell, Castner, Gulkana, Muldrow, Tazlina, Kennecott, Worthington, and Valdez) during the last

days of June, the month of July, and early August. Travel was by automobile or aircraft. From August 13 until September 5, studies were made of the glaciers in Prince William Sound, the party operating from the limit purse-seiner *Valiant Maid* out of Cordova. This latter investigation was the principal goal of the summer's activities and followed up the work of the Harriman Expedition in the late 1890's, the surveys of Grant and Higgins, of the Geologic Survey, and of Tarr and Martin in the early 1900's, and the expeditions of William O. Field in 1931 and 1935. In addition, a new set of aerial photographs were obtained from the United States Navy to supplement earlier vertical and oblique photographs taken in 1941, 1951, and 1954.

Principal methods of investigation and documentation were survey mapping, record photography, and botanical dating. Surveying was accomplished using a Wild T-12 Pocket Theodolite. Stations were established at prominent rock positions around the terminus. Horizontal and vertical angles were then determined between these stations as well as from the stations to prominent points on the glacier. The triangulation network thus established provided the base for a roughly accurate map of current features. These maps, when drawn to completion, are useful for plotting additional data, locating stations, and comparing existing conditions of the terminus with those evidenced by older or future maps. Photographic documentation was accomplished by taking pictures in panoramic series from permanent stations, usually the same ones occupied for survey mapping. The resultant photographs may be compared to others of a different date to detect changes in terrain and vegetation as well as in the glacier.

Botanical dating was used to establish the dates of previous glacier advances. This is normally accomplished by coring or sectioning certain trees, counting the annual rings to determine their age, and then adding a corrective figure for the time required for the tree to become established. Trees on recessional or terminal moraines are usually selected for dating since they normally indicate a period of glacial stability, whereas the less pronounced topography of the inter-moraine outwash reflects poorly defined stages of recession.

The project will continue through the International Geophysical Year, but the program will not be as ambitious as in 1957. Next summer, the 4.2 group will probably investigate glaciers in the Juneau, Glacier Bay, Skagway and Yakutat areas. When the final surveys are completed and the data is processed, it is quite likely that Project 4.2 will have produced the most extensive and comprehensive record of Alaskan glaciation to date.

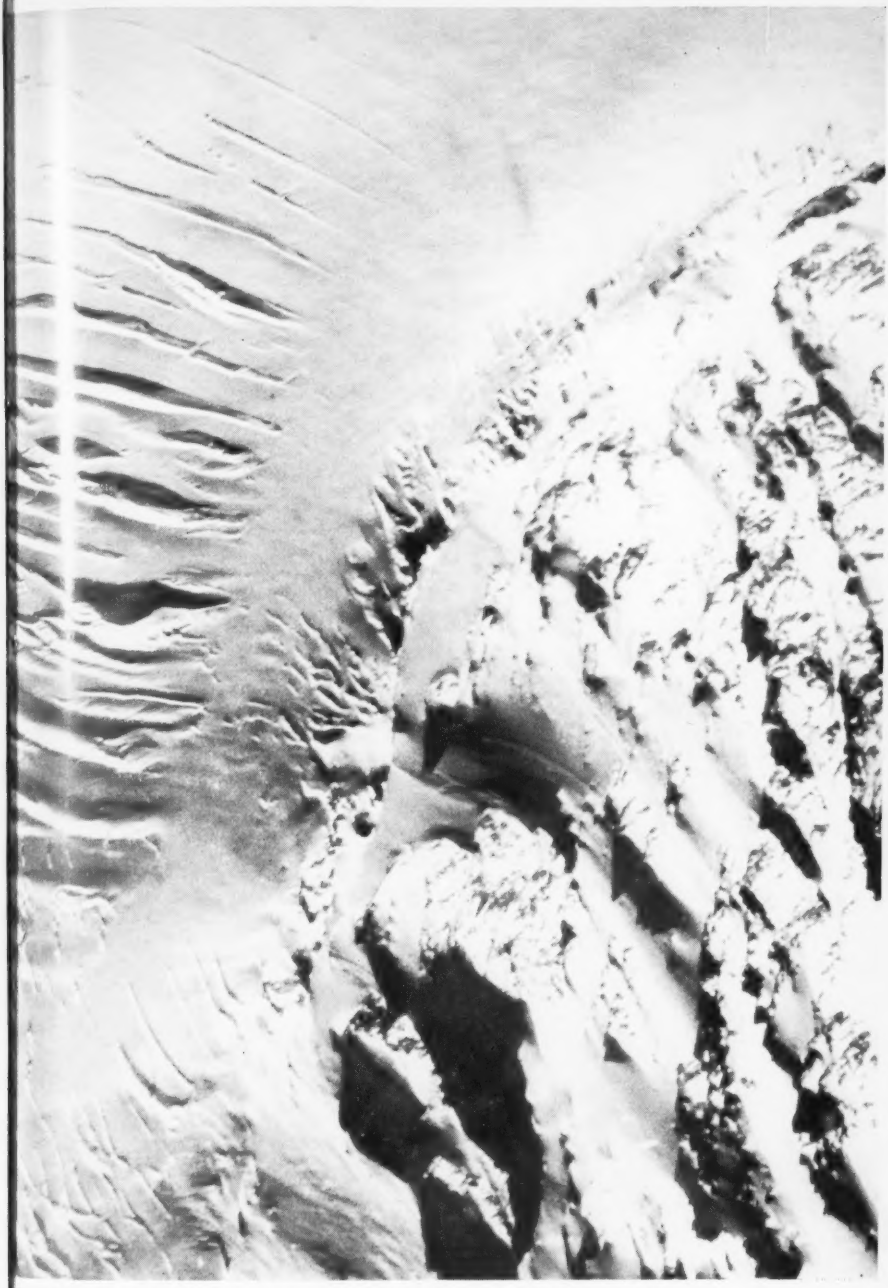


PLATE 21

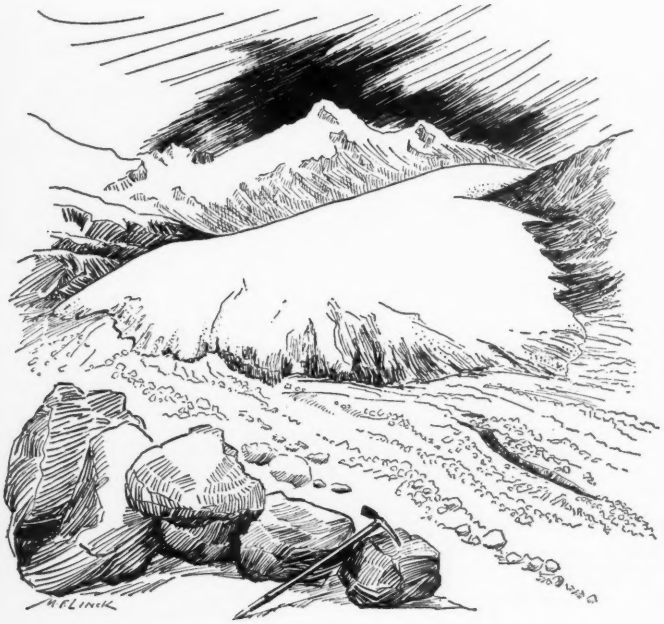
Figure 2: **Aerial view of uniformly spaced crevasses on a glacier in the eastern Alaska Range.**

PLATE 25 *Photo by Adams Carter*

PEAK 8620. MT. McKINLEY RANGE. Route led up semicircular ice ridge in cent : and thence to the left along the skyline to the summit.

Project 4.17

The primary purpose of Project 4.17 is to make a detailed study of McCall Glacier in the Brooks Range of Alaska. Particular emphasis is being placed on the study of the glacier's micro-climate with the aim of developing correlations with the Arctic Ice Pack. Research on the polar McCall Glacier should also provide some interesting comparisons with the temperate Blue Glacier in the Olympic Mountains which is also being investigated in detail (Projects 4.1 and 4.3). Although operations were suspended after the death of Richard Hubley, Senior Scientist on the project, it is expected that a four-man party will return to the glacier this spring.



Crevasse Patterns in Glaciers*

LAWRENCE E. NIELSEN

ALTHOUGH most mountaineers are familiar with crevasses from the practical standpoint, few know much about the physics of the formation of crevasses or the reasons why crevasses assume certain shapes or patterns on glaciers.

Crevasses are formed as a result of forces great enough to break ice as a glacier moves over its bed. These forces or stresses can be tensile, compressive, or shear in nature, or a combination of these. Ten possible idealized combinations of stresses and the resulting crevasse patterns are illustrated in *Figure 1*. The first and third columns give the type of stress or stresses that are assumed to exist at the top edge of a plan view of a glacier as shown in the second and fourth columns. The glaciers flow from left to right and the surface of the glacier moves faster in the center in general than at its edges. The second and fourth columns show the type of crevasse pattern to be expected with each type of stress or combination of stresses. Each of these types of crevasse patterns will be discussed in more detail.

The type of stress illustrated in the upper left corner of *Figure 1* is pure longitudinal tension. This gives rise to a series of crevasses running across the glacier at right angles to the direction of the stress. This type of crevasse is quite common on glaciers. It occurs when the bed of the glacier changes from one slope to a greater downhill slope. Thus, this is the type of crevasse found in most icefalls. Nye's theoretical work (1)† has shown that this type of crevasse may also be expected in the accumulation area near the head of a glacier even though the slope of the bed does not change. This comes about because of the fact that most glaciers flow faster as they move down glacier in the accumulation area. This increase in speed tends to make the ice in front pull on the ice behind it. (See the work of Nye (1) and Nielsen (2) for a mathematical treatment of this subject of glacier mechanics.)

Pure transverse tension is illustrated in the second sketch of the left side of *Figure 1*. This type of stress produces straight crevasses running parallel to the glacier. These crevasses can be expected where the width of a glacier

* Based in part on a lecture given before S.I.P.R.E., U. S. Army, Corps of Engineers, at Northwestern University, April 5, 1957.
† Bibliography at end of article.

increases. Good examples are often found where a narrow valley glacier leaves the mountains and forms a bulb on the end as it spreads over a level plain.

The middle sketch on the left side of *Figure 1* represents a pure shearing stress. The stress diagram is for the left side of the glacier as one faces down hill; the stress diagram would be the reverse for the right hand side of the glacier. The crevasses are straight lines running up glacier from the edge and forming 45-degree angles with respect to the edge. Crevasses of approximately this shape are often found near the edge of glaciers where the flow rapidly increases in going towards the middle.

The next sketch represents pure tension in both the longitudinal and transverse directions. Two series of crevasses are formed at right angles to each other. This type of crevasse pattern may be found where the ice goes over a dome-like protrusion in the bed. This pattern may also be found where the bed of the glacier suddenly increases its slope at the same time that its width increases.

The bottom sketch on the left side of *Figure 1* represents longitudinal tension with simultaneous lateral compression. The straight transverse crevasses are similar to those discussed with the first sketch and occur under similar circumstances.

At the top right hand side of *Figure 1,* the stresses are simultaneous shear and longitudinal tension. The resulting crevasses form angles between 45 and 90 degrees with respect to the sides, and they curve away from the edges towards the center. Sometimes smaller crevasses may be found at right angles to the main crevasses. This pattern of crevasses may occur in the accumulation regions or near the edges where the slope of the bed increases.

The next sketch illustrates another common type of crevasse. The stresses are simultaneous shear and longitudinal compression. The crevasses form angles less than 45 degrees to the sides, gradually turn up glacier, and disappear as they approach the middle of the glacier. This crevasse pattern may be found near the edges where the slope decreases—for example, near the base of icefalls. It is also found in cases where the center of the glacier is considerably higher than the edges. One might also expect to find such crevasses in the ablation area of the lower parts of glaciers where the glacier is slowing down and putting the ice under compression.

The next sketch illustrates the type of crevasses where the ice is under longitudinal compression and transverse tension. These longitudinal crevasses are essentially the same as the case of transverse tension.

The next crevasse pattern shown in *Figure 1* results when ice is subjected to shear and transverse tension. In addition to crevasses which turn up

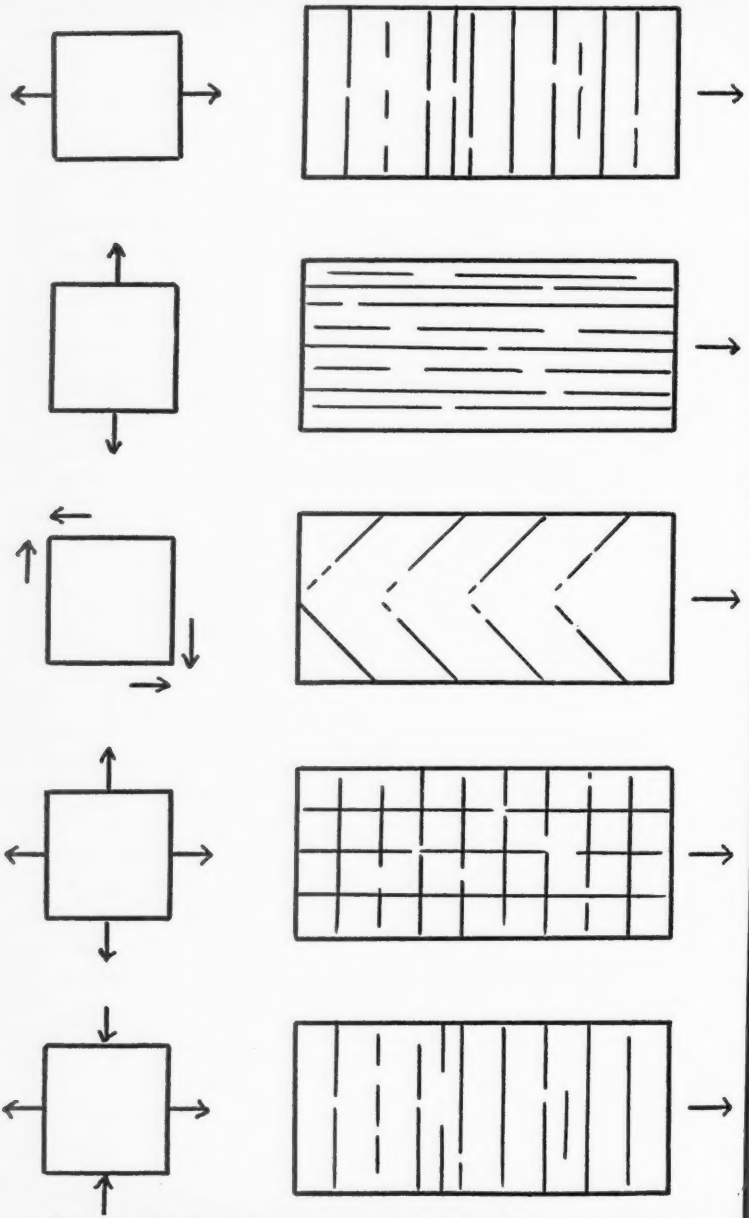
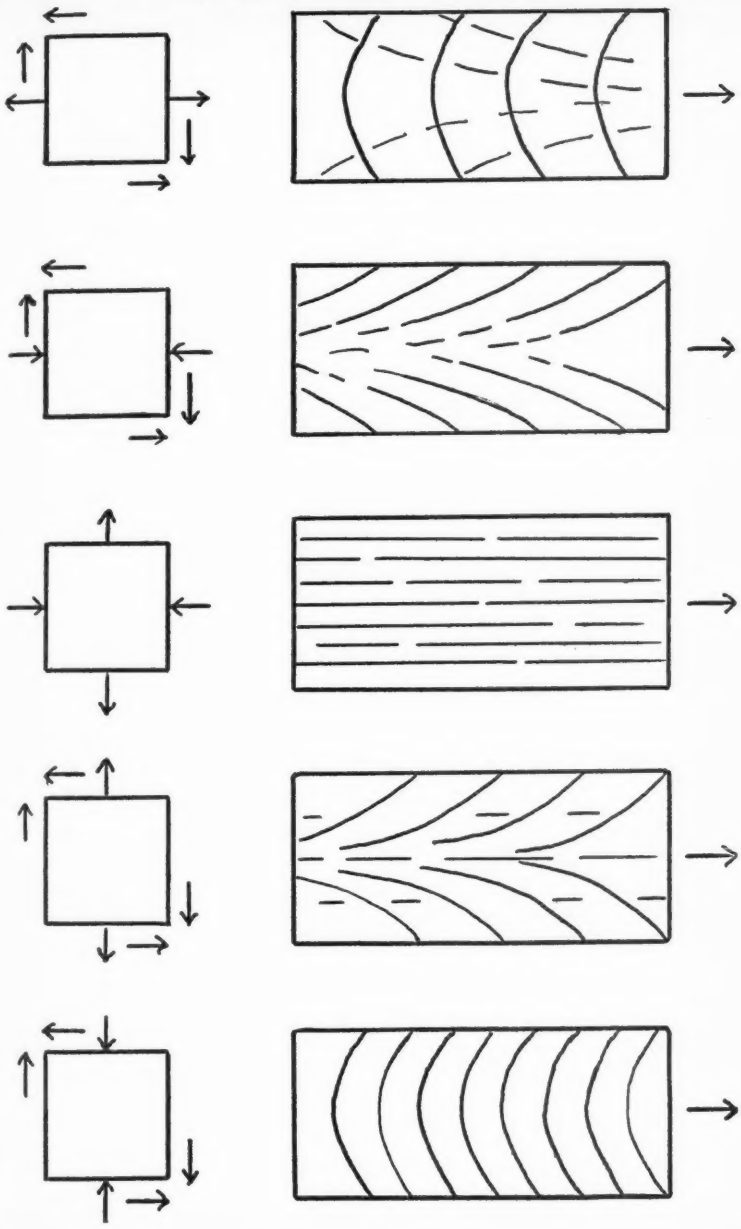
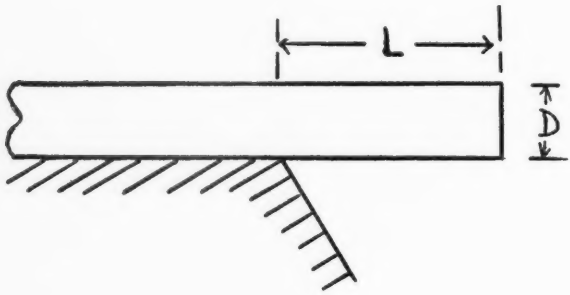


Figure 1: Idealized stress patterns and the resulting crevasse patterns in glaciers.





$$\frac{L^2}{D} = \frac{S}{3\rho g}$$

THICKNESS (FT.) D	LENGTH (FT.) L
100	132
200	187
300	228
500	295
700	350
1000	417
1500	512
2000	590

Figure 3: **Theoretical spacing of crevasses in a glacier.**

glacier, there are longitudinal crevasses. Such crevassses may be found where the glacier increases its width.

The last crevasse pattern shown in *Figure 1* is caused by simultaneous shear and transverse compression. These crevasses point up glacier at the edges, but gradually turn in toward the center of the glacier. They may be found where the glacier narrows down.

In general, crevasses which are curved are largely a result of a shearing action brought about by an increase in the speed of flow of the glacier in going from the edges to the center.

Crevasses have other interesting aspects in addition to the patterns they form. For instance, crevasses are often amazingly uniformly spaced. This is especially true of transverse crevasses in the center of a glacier such as are shown in *Figure 2*.* It is easily shown that this phenomenon is exactly what one would expect. When the bed of a glacier is uniform, there is in general little compression or tension on the ice. However, if the slope increases as the glacier moves down hill, tension is applied to the surface. *Figure 3* illustrates an extreme case where the glacier goes over a cliff. As the glacier moves, a block of ice is pushed out over the edge of the cliff. The weight of the overhanging ice puts a tension on the surface above the cliff edge. When the tension reaches the breaking strength of ice, a crevasse forms and a block of ice breaks off. When the block breaks off, the tension is relieved until the glacier pushes another block out over the edge. Thus, every time a crevasse forms, the tension is relieved until the glacier moves enough to build the tension back up to the breaking strength. Therefore, the spacing of crevasses indicates how far the glacier must move to build up sufficient stress to break the surface ice. Since the important factors such as the thickness of the ice and its breaking strength are essentially constant, the crevasses should be uniformly spaced.

Figure 3 illustrates an extreme case, and L, the theoretical spacing of crevasses, should be the largest possible for a solid glacier moving over an abrupt drop-off in its bed. Theory predicts that approximately

$$\frac{L^2}{D} = \frac{S}{3\rho g}$$

where L is the spacing of crevasses, D is the thickness of the ice, S is the breaking strength of ice, ρ is the density of ice, and g is the acceleration of gravity.

If one takes 200 pounds per square inch as the breaking strength of ice, then the table accompanying *Figure 3* gives the spacing L as a function of

*Plate 24, opposite page 74.

the thickness of the glacier. From observations on glaciers it appears that the theoretical spacing is too large by a factor of about four. This is not surprising as the value for S was the value for pure ice while glacier ice at the surface is usually firn or consolidated snow, which is much weaker than pure ice. In addition a glacier contains many imperfections and an irregular surface; these act as stress concentrators and further lower the strength of ice. Although the above equation qualitatively predicts the spacing of crevasses, it has never been checked by data collected on a glacier. Research on crevasses is woefully lacking. Maybe it will be a mountaineer who will furnish the data required to test the theories of crevasse formation.

On the basis of what has been said above about the build up of stresses and their relief, it could be assumed that the birth of a crevasse is a sudden event. This is certainly true in many cases. The glacier suddenly cracks open with a loud report, the surface shakes, and a long narrow crack appears in the ice. A crack about half an inch wide and several hundred feet long appears to be a typical "baby" crevasse.

Many people expect to find the most crevasses where the slope is steepest. This is not necessarily true. Crevasses generally do not form on uniform slopes (except near the edges) even if they are steep. They form where the slope changes from one value to a steeper value. Thus, on many occasions, a steep slope may contain few if any crevasses, but at the top of the slope where it levels out there may be many crevasses.

Most glaciers move from several inches to over five feet a day. This movement carries crevasses downstream from the points of their origin. However, if one looks at a crevassed area from year to year, the pattern of crevasses generally remains fairly constant and appears to remain nearly stationary because most crevasses are formed at about the same place, they grow for a while as they move down glacier, and then they close up again when they reach an area of compression.

One often hears statements something like: "This glacier must be very active as it is highly crevassed." This statement is not necessarily true, although it is often justified. There are several reasons why glaciers are more crevassed when they are active than when they are stagnant: (1) Active glaciers are fast moving, so crevasses are formed at a faster rate than normal; once formed they have less chance to seal up or be filled by snow. (2) If the activity is due to greater than normal accumulation, the longitudinal differential velocity is great. Tension produced by this differential velocity can cause more crevasses than normal to form or crevasses may develop in areas where they normally are absent. (3) Increased velocity of flow also causes an increased transverse differential velocity.

There is a greater than normal change in velocity between the edges and the center of the glacier. This produces increased shearing stresses. (4) Increased activity in glaciers is often accompanied by waves of ice. The bulges created by the waves put a tension on the surface which results in many crevasses. (5) The properties of ice depend upon the speed of deformation. Ice is brittle to a hammer blow, but it can be deformed to the extent of hundreds of percent by mild stresses which act for a period of months. Thus, as a glacier moves down a rough bed, the ice may have time to flow over humps or small cliffs without forming crevasses if the rate of flow is slow enough. However, when the ice moves faster, time may not be available for deformation to occur, so crevasses are formed which relieve the built-up stresses. Ice is not the only material which shows this "viscoelastic" behavior; many plastics, pitch, etc., are ductile to slowly applied forces, but brittle to rapidly applied forces.

Next time you look down on a glacier from a mountain top, notice the various patterns formed by the crevasses. Would you have predicted these from the topography? With a little practice you will be able to correlate the crevasse patterns with changes of slope of the glacier, underground topography, and changes in width or curvature of the glacier. At the same time you will find you appreciate your climbing more.

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Wheeler Peak by the Northeast Face

ROY M. GORIN

A STUPENDOUS vertical unclimbed rock wall—this was the challenge that brought Don Clarke, Harvey Hickman, Si Ossofski, and me to Wheeler Peak in eastern Nevada. Only two weeks earlier the same challenge had brought Cecil Ouellette and Dick Woodford to the mountain, but after surveying the tremendous precipice of the Northeast Face they realized that they were not prepared for that type of climbing and made the ascent by a different route. From their experience and from Weldon Heald's articles in several mountaineering magazines, we knew that this would be no ordinary climb.* Few mountains in the United States or Canada tower so overwhelmingly above one as does Wheeler Peak when approached by way of its north cirque.

But let me begin at the beginning. We had set the Memorial Day weekend, 1957, for our assault. We drove north from Los Angeles with some trepidation because of the late spring storms, and when we reached Baker, Nevada, early in the morning we found that these storms had transformed the high country into an out-of-season winter wonderland. The ranger station at Baker was not open, but we were able to get information about the approach to the Northeast Face of Wheeler from Frank Kaufman, an old-timer of the region who had been with Weldon Heald on his 1956 visit when Matthes Glacier, in the north cirque, was discovered. We drove on to the public campground north of Lehman Caves National Monument.

From the campground a six-mile trail goes to Stella Lake, but we soon lost it in the snow which came all the way down to the 8000-foot level. It was soft slushy snow, the kind that makes travel seem like wading upstream with your boots on. A mile and a half from Stella Lake we turned southwest and continued to push our way uphill through snow, now nearly waist-deep. On one occasion Harvey sank in so deep that we had to dig him out. Base Camp was finally made at timberline, at 9500 feet. Here a portion of the Face was visible. As we looked at it, it became more and more apparent that this was going to be a real climb—one not likely to be accomplished in a one-day assault. It was necessary to plan for a bivouac on the cliff.

*See Bibliography at end of article.

Fortunately for us it froze that night so that when we started at 4 A.M. we were able to walk up the snow which lay in a long gully that led directly to the great cirque and out onto Matthes Glacier. As we approached it the Northeast Face looked more and more formidable. Hours and hours of fifth-class climbing were in sight. By this time we were willing to settle for a route that would "go"—not one that would offer sporting difficulties. A series of unconnected chimneys divides the face, with the right-hand side appearing to be at a less severe angle. A short snow-tongue led to the first of the chimneys and involved about an hour of step-cutting. The real climbing then began. We worked our way up over a series of high-angle ledges, which kept getting smaller and smaller as the cliff became steeper and steeper. Snow or running water now and then filled the handholds. Several times rocks whizzed by like bullets, but we soon managed to get out of their path.

It seems to be a fact that on the great faces of most high mountains the angle of the rock slabs is against the climber. Wheeler Peak is no exception. Moreover, cracks for pitons were hard to find as we progressed. They either didn't exist or were too shallow. Once I led the party into a cul-de-sac from which there was no assurance that even hours and hours of fifth and sixth class climbing would get us to the summit. We got out by a 50-foot back-track and found another route that brought us to a point about 800 vertical feet above the end of the snow tongue from which we had begun the climb.

We were now about a hundred feet to the right of the chimneys perched on a high-angle snowfield. Because of the rockfall danger we had no desire to return to the chimneys and the face above us appeared almost overhanging. Later in the year, with dry rock, a strong party might succeed in a direct assault, but in the present circumstances we had either to find a route farther to the right or give up the attempt. As we had no intention of doing the latter, we traversed cautiously across the snowfield for about 300 feet. There we found a promising route, with short fifth class pitches alternating with easy fourth class ones. We kept going until 8:30 that night, looking for a place large enough to make a bivouac. At last with our ice axes we cut away some of the snow on a ledge about four feet wide, where, tying into a piton, we spent a shivery night.

At 4:30 in the morning we were on our way again. After a few pitches of easy climbing we came to a long steep snow-gully that led directly to the summit rim. We had to cut steps at times, but for the most part we merely kicked them out. We were on the top at 7:30—a first ascent by the Northeast Face.

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The Mountains of Arizona

WELDON F. HEALD

"MOUNTAINS, mountains, everywhere, Nor any peak to climb" is a paraphrase which might be applied to Arizona. Yet it is hardly a fair statement. Although it's true that all the highest summits may be reached by simply walking uphill, there is no region in the country which offers a greater variety of rock climbing, canyon crawling, acrobatic escalades, and hardware adventures. In fact, to climb all of Arizona's cliffs, towers, buttes, spires, and mesas would take a Methuselan mountaineer centuries to accomplish. He could, too, choose a different type of rock each day of the week and start at the top and climb down quite as often as he does the normal way. For Arizona is a paradoxical land and her mountains are no exception.

Considering the vast size—some 114,000 square miles—the state's topography is surprisingly simple. It has the broad, sweeping, uncluttered lines of the Great-Open-Spaces. Someone once said that you can see farther and see less in Arizona than anywhere else. He was undoubtedly an uninitiated visitor still bemused by massed humanity, but in a sense he was right. For there are only three topographical regions in the entire state, with a couple of sub-regions thrown in for variety.

Nearly the whole northern third of the state is a series of high plateaus, ranging in elevation from 5000 to over 9000 feet. They vary from barren desert in the lower altitudes, through a transition zone of pinyon-juniper woodlands, to extensive forests of pine, fir, spruce, and aspen on the lofty Kaibab, Coconino, and Mogollon plateaus. Here the Colorado River and its tributaries have spent millions of years sculpturing a unique region that extends far northward into Utah. Called the Canyon Country, it exhibits a startling inverted landscape in which the "mountains" have their bases on the plateaus, but extend downward into the earth instead of up in the air. Supreme among these upside-down "ranges" is the Grand Canyon of the Colorado, more than 200 miles long, five to 12 miles wide, and some 5000 feet deep. But throughout northern Arizona the land is cut and broken by subsidiary canyons incised 1000 to 3000 feet below the surface. As a result, the Canyon Country is like no other and few regions in the world are packed with so many erosional wonders. It is a fascinating, brilliant-hued

desert realm of far distances, intricate, twisting gorges, soaring monoliths, and fantastic rock formations.

But there is a paucity of normal, right-side-up mountains, and you can almost count them on your fingers. However, fire as well as water has shaped northern Arizona and there are a half dozen dead volcanoes that rise in grand isolation above the forested Coconino Plateau, 50 miles south of the Grand Canyon. Among these are Bill Williams Mountain, 9341 feet, Sitgreaves Mountain, 9600 feet, and Kendrick Peak, 10,418 feet.

But by far the most impressive is San Francisco Mountain. Visible for more than a hundred miles in all directions, this towering volcanic peak was probably named by Spanish explorers as early as 1540, and has been one of the Southwest's most famous landmarks ever since. From a base some 10 miles in diameter, the mountain sweeps upward in graceful lines more than a mile above the city of Flagstaff, to the south. Its crest consists of a semicircle of pointed summits around a blasted crater that probably once rose 3000 feet higher. Topping them all are Fremont Peak, 11,940 feet, Agassiz Peak, 12,340 feet, and Humphreys Peak, 12,670 feet,* the three loftiest points in Arizona. Locally called the San Francisco Peaks, they rise well above timberline and carry considerable snow far into the summer.

All of these northern Arizona volcanoes are a part of the huge two-million-acre area of ancient and recent vulcanism called by geologists the San Franciscan Volcanic Field. It also contains numerous craters, cinder cones, ash deposits, and lava flows. But interesting and scenic as they are, none of them provide any mountaineering in the technical sense. However, Bill Williams and San Francisco mountains have become winter sports centers and the Arizona Ski Bowl, on the west slope of the latter, is well known to Southwestern schussers and slalomists.

To the south, the Coconino Plateau merges with the Mogollon Plateau, which continues in a southeasterly direction. Together they carry an almost unbroken forest of ponderosa pine, 175 miles long and 25 miles wide. Elevations average 6000 to 7500 feet, and Mormon Mountain, Baker Butte, and a few other 8000-foot points are mere rounded humps above the general surface. But near the New Mexican line rise the White Mountains. Here are 800,000 acres of pine, fir, spruce, and aspen forests alternating with high, rolling meadows holding small lakes and dominated by a cluster of lofty summits, which culminates in Baldy Peak, 11,590 feet. The White Mountains are the state's favorite summer playground—ideal country for

* U. S. Coast and Geodetic Survey, 1952; supplanting earlier measurements of 12,561 and 12,611.

fishermen, hunters, trail-riders, campers, and hikers. But, once again, the climber finds little to interest him.

There are two other mountainous areas in northern Arizona. In the extreme northeastern corner are the rugged Carrizos, topped by Pastora Peak, 9240 feet, and to the south, along the border of New Mexico, stretch the Chuska and Lukachukai mountains, rising to Roof Butte, 9575 feet, and Matthews Peak, 9403 feet. With rocky crests, deep, sheer-walled canyons, and bold cliffs, this is a spectacular region, until recently remote and little known. However, with the gas, oil, and uranium boom rapidly opening up the Four Corners country, these mountains should become an attractive field for rock climbers. The other section is in the lower desert near the Colorado River in the western part of the state. Here several ranges stand above wide, arid valleys. Highest are the pine-wooded Hualpai Mountains, south of Kingman, with Hualpai Peak, 8420 feet, and the Cerbat Range, further north, rising to Mount Tipton, 7364 feet. The former is a small recreation area, which furnishes some scrambling on granite slabs and domes.

But what about the Inverted Mountains? Strange anomaly! Turn downward from the high plateaus and you enter a different land. On all sides endless varieties of rock formations confront you and every needle, steeple, cliff, and monolith is a challenge. In this rough, upside-down country even explorers and archaeologists are forced to use climbing techniques, and ropes, bolts, and pitons are often standard equipment in reaching some of the ancient, high-perched Indian cliff dwellings. In fact, rock climbing figures in almost all Canyon-Country literature, and there are hair-raising descriptions of cliff-crawling by Major Powell, whose parties were the first to run the Colorado River in boats in 1869 and 1871-72.

Perhaps the best known climbs made by a scientific group were the first ascents of Shiva Temple and Wotans Throne in 1937. The expedition was a biological one, conducted by the American Museum of Natural History, and the successful climbing party was led by Walter A. Wood, Jr. Both of these summits are within the Grand Canyon and, although they soar a vertical mile above the Colorado River, their tops are slightly below the level of the North Rim. So, in each case, the take-off point was higher than the summit gained! (*AAJ*, 1938, 3:2, pp. 137-141.)

Another notable first ascent was that of Agathla Peak or Needle by Ray Garner, Herb Conn, and Lee Pedrick, in 1949. This pointed spire at the south entrance to Monument Valley, rises sheer 1255 feet above its sloping base and is an ancient volcanic plug, similar to New Mexico's famous Shiprock. Climbing equipment consisted of 50 pitons, 40 tamp-in bolts, 15 karabiners, four 120-foot nylon ropes, and 100 feet of rope slings. The

party accomplished the feat in exactly 24 hours, including a forced bivouac on a ledge below the summit. (*AAJ*, 1950, 7:4, pp. 406-414.)

But, so far, the climbing possibilities of the Canyon Country have barely been touched, and there are literally hundreds of remote, cliff-guarded summits awaiting future conquerors.

The northern plateaus break suddenly to the south and southwest in downward-plunging cliffs, 1000 to 3000 feet high. Called the Mogollon Rim, this impressive and colorful escarpment stretches in an almost unbroken line for a distance of 150 miles, and forms the topographical boundary between northern and central Arizona. South of the Rim to the Gila River, then swinging in a northwesterly direction to the Colorado River, on the California line, is the state's most continuously mountainous area. It is a country of swelling ranges, high mesas, enclosed valleys and basins, and deep, winding canyons, and it varies from desert in the lower elevations to fine coniferous forests on the peaks. The most prominent mountain groups, from east to west, are the Blue Range, Sierra Ancha, Mazatzal, and Bradshaw mountains. But, strangely enough, few summits reach more than 9000 feet and, as in the north, the highest are mostly simple walkups. However, the entire region is exceedingly rugged and offers numerous excellent rock-climbing areas. All of central Arizona is highly mineralized, having three active copper districts and scores of mines and camps, ranging from ghosts to boom towns.

The southern third of the state consists mostly of the huge drainage basin of the Gila River and its tributaries. Here a system of broad, shallow valleys slope gently from an elevation of 100 feet on the Colorado River, south of Yuma, to more than 4000 feet in the southeastern corner. Such a great altitudinal difference gives southern Arizona considerable climatic variation. In the western section are some of the hottest and dryest deserts in North America, while the high grasslands and oak woodlands to the east have one of the pleasantest year-round climates in the country.

Throughout the area, north-south-trending mountain ranges separate the valleys. In the western desert they are widely spaced, barren and rocky, and seldom rise over 3500 feet elevation. But the eastern half contains a score of fine ranges with summits 7000 to 10,000 feet altitude. On their lofty backs they carry oases of humid northern climate in startling contrast to the arid valleys below, and each is an isolated world of secluded sylvan canyons, cascading streams, flowery meadows and miles of magnificent evergreen forests. Wildlife and birds are particularly abundant and include many Mexican species, such as the coatimundi, peccary, coppery-tailed trogon and thick-billed parrot. In fact, for the naturalist, nature lover, and outdoor

enthusiast, there are no more attractive places to explore in the United States than these "Sky Islands of Arizona."

Highest are the Pinaleno Mountains, culminating in the rounded, spruce-topped Mount Graham, 10,718 feet. A good motor road ascends from Safford, in the Gila River valley, and for 13 miles parallels the crest at an elevation of over 9000 feet through mountain-forest country that resembles northern Idaho. Further south are the Chiricahua Mountains, rising to 9795 feet. Eighty miles long and 20 miles wide at their broadest point, they contain a rugged wilderness of peaks and canyons, and provide some of the best rock climbing in southern Arizona. On the west slope is Chiricahua National Monument—"The Wonderland of Rocks"—and over the divide, to the east, is Cave Creek Canyon, cut 3000 to 3500 feet deep into salmon-colored lava rock. Here, unclimbed Cathedral Rock, towering 2000 feet above the canyon floor should prove a real workout for an ambitious party.

Other major southern Arizona ranges are the Huachuca Mountains, with Miller Peak, 9445 feet; the Santa Ritas, with Mount Wrightson, 9432 feet; and the Santa Catalinas, rising to Mount Lemmon, 9185 feet. These last mountains stand like a giant wall north of Tucson and are the city's natural air-conditioned penthouse. A paved road climbs to recreation and resort areas among the pines, popular both in summer and for winter snow sports. Further south and west is the aspiring pyramid of Baboquivari Peak, 7864 feet, the one major summit which provides an exhilarating scramble as the easiest way up. (Walter D. Wilcox: "Rambles and Mountain Climbs in Various Parts of the World," *AAJ*, 1946, 6:1.)

Strange as it may seem, the only systematic and organized climbing in Arizona has been in the lower desert mountains of the southwestern corner. Here Castle Dome, the Kofa, Ajo, and other ranges are often visited on week-ends by mountaineers from nearby California, and they offer a wide variety of climbing and exploration possibilities for fall, winter, and spring. Leaders in the area are members of the Desert Peaks Section of the Sierra Club and the Kachina Club of Phoenix. Information about the region, or climbing anywhere in the state, may be obtained from either of these organizations.

So Arizona is a paradoxical land of upside-down mountains, desert peaks, high forests, and wide-sweeping plateaus. It has none of the continent's outstanding ranges, but if you are willing to mix with your climbing a little archaeology, geology, history, photography, botany, or zoology, there are few places in the country more stimulating to explore, or more rewarding.

The Harvard Andean Expedition of 1957

CRAIG MERRIHUE

INSPIRED by the successes of Shipton and Tilman with mountaineering expeditions in worthwhile mountain regions on limited means, I began contemplating two years ago a low-cost expedition to some twenty-thousanders in any part of the world whatever, so long as the cost ran to no more than three figures. It soon became apparent that the most practicable continent was South America and in that by far the most attractive area was the Cordillera Vilcanota in the southeastern corner of Peru, with its unclimbed peaks, unexplored terrain, and largely vertical scenery.

After the usual problems, the party evolved into Caspar Cronk, William W. Hooker, Steven Jervis, Earle R. Whipple, Michael Wortis, and Craig Merrihue, all of whom had climbed together in the Harvard Mountaineering Club. We flew to Lima by low-cost airplane. In Lima we bought our food and some equipment and then located a truck to get it all and three of us to Cusco. Pages could be filled describing the three-day trip into the 12,000-foot highlands along a desperate succession of hairpin turns on a narrow dirt road carved into the walls of cliffs which drop thousands of feet into rock gorges below. Eventually we reached Cusco, rejoined the others who had gone by air, and hired another truck to the edge of the mountains. There, near the native village of Ocangate, we were fortunate in meeting a friendly German youth, who was running a large hacienda during his parents' vacation. He was abundantly helpful, providing us with his pickup truck, hiring for us mules at a third of the usual rate, and providing us with an Indian, Leandro by name, to guard camp. His hospitality was boundless, and we shall long remember the sumptuous banquets and splendid quarters with which we were provided.

In fact, life there was almost too pleasant; finally, we recalled our reason for coming to Peru and set out with our mules and light packs, Leandro in tow. He was to be our pot washer, chore boy, and chief bearer for our most essential item of mountaineering equipment, the 12-string guitar. Despite endless difficulties with our cut-rate mule driver, who managed at all times to devise the longest possible route between any two specified points, we set up a splendid Base Camp southeast of Ausangate. Located directly in the shade of several sheer rock and ice peaks, it was as spectacular a campsite as

one could hope for. We selected an improbable-looking spire for our first attempt, on the basis of an easy route up the back. Since it was unnamed, we christened it Ccapana Peak after the hacienda where we received such gracious hospitality. The route was easy, so that the major problem was our own lack of conditioning, which was appreciable. But after stationing an intermediate camp at about 18,000 feet we were able to drag ourselves the remaining 1000 feet to the summit. We had entertained a vague notion of effecting a traverse down the west ridge of Ccapana and up the east ridge of the adjoining rock pyramid "Pachanta Peak." But when closer inspection revealed that Ccapana's west ridge was not a ridge at all, but rather a vertical cliff, we abandoned this mad plan.

Later in the summer we returned again to Pachanta. Four of us set out on what was planned as a reconnaissance, since no reasonable route was obvious. At the base of the pyramid, Wortis and Jervis went off to scrutinize the south face, while Hooker and I hoped to find a route to the col adjoining Ccapana. To our surprise, we found some excellent rock climbing on our route leading to the col, where it developed into an interesting ice climb to the summit. The constant step-chopping and belaying slowed progress, so that it was 4:30 by the time we were looking down the other side. We quickly left, the prospects for a night spent there being unattractive, and got to the col with just enough light remaining to select a rappellable route down the steep snow and ice slopes, avoiding entirely the rock-climbing sections. Slow but steady progress brought us back to camp before midnight.

During the next week we split into two groups of three, one of which went south to explore the great snowfields and investigate routes up the back of Jatunhuma, the massive unclimbed 20,000-er which loomed above Base Camp. Meanwhile the rest of us set out for a determined attempt at its promising north ridge. After establishing two advance camps on this peak, the highest under 18,000 feet, we set out at dawn for a summit try. The route was very interesting. The first part was a steep icy ridge, followed by a small overhanging ice cliff, above which were several hundred feet of ice slopes requiring constant step-chopping. The upper portion of the mountain was a maze of crevasses and huge séracs, one of which was somewhat disconcerting: it seemed to overhang the entire route and was roughly the size of Hancock Hall. Due to the unforseen difficulties, we reached the base of this huge block at 4:30; the lateness of the hour and the impossibility of getting over or around this block with our remaining two ice pitons forced our retreat. We resolved to return to this magnificent route with a vast supply of iron. We never did manage to get back, but the mountain was

climbed later in the summer by Günter Hauser's group, who negotiated the summit block by direct aid through a large crack, in a neat bit of climbing. We returned to camp, making use of a full moon and our fixed ropes; and the next day we rejoined the others at Base Camp. Their time had been well spent in climbing three nearby peaks and in gathering valuable surveying data for that section of the range.

Ausangate was our next objective; at 20,500 feet, the highest peak in the range. It was climbed in 1953 by Heinrich Harrer by the southwest glacier. However, it was the northern ridges of the mountain that interested us most. We selected our route more or less by default, since most of this side of the mountain is sheer cliff. There is, however, an easy snow route which leads to the base of the north ridge, from the middle of which there seemed to be a very steep glacier, almost an ice-gulley, giving access to a snow ridge connecting directly with the summit ridge. Several days of relaying loads were required to establish a camp at the base of the glacier, but our first attempt to pack a camp higher at the base of the snow ridge was utterly stalled by a gigantic crevasse that spanned the entire glacier. Moreover, the cliffs on either side of the glacier began to spray the route with rocks of all sizes as soon as the morning sun hit them. The only safe procedure was to get through this hazard very early in the morning. With this in mind, Wortis and I managed a pre-dawn start, which almost failed to get out of the tent when Mike mistook the blue cheese for brown sugar, dumping it into the pressure cooker with the apricots—a startling combination. Despite this initial setback, we reached the crevasse ahead of the sun, carrying light packs for an anticipated bivouac. By climbing up an icefall at one end of the crevasse we were able to get above the obstacle and by noon we were just below the snow ridge. The summit ridge seemed only a few hours away, with the worst behind us. Then things began to happen. Mike was climbing over a gigantic ice block at the edge of a shallow crevasse, while I belayed him from a perch above on a soft snow wedge. Although the block had seemed as solid as the mountain itself, it suddenly broke loose with Mike aboard and began to vanish into the crevasse. My footing was on the soft snow, and I was slow in applying the belay, although in time to keep him above the block. No one was injured, but as we were both rather shaken we decided to turn back. We retreated to Base Camp and the hacienda for a much needed rest.

Again, because our host made things so pleasant and because there were fascinating native festivals in process, with dances, singing, bull fights, and ample consumption of Pisco (the national 100-proof fluid), many days passed before we returned to the mountains. After various frustra-

tions because of our only-occasionally-sober mule driver, we set up another Base Camp in the northeast section of the range, one of the most interesting sections because of the unexplored areas and the dozens of fine peaks, of which only Colque Cruz (20,100 feet) and Huayna Ausangate (18,700 feet) had been climbed. In contrast to most of the Vilcanota, this part of the range is very inaccessible, with mile after mile of moraines, and enormous glaciers disadvantageously located. Our major objective was to reach the remotest section, "Shoe Col," a broad snow col between two large but easy-looking peaks, "Shoe Peak" and Jatunrite, the latter just over 20,000 feet. With a camp on the col, both of these would be relatively short ascents. The col was expected to provide an ideal survey station.

The succeeding days were spent relaying loads, finding routes across glaciers and moraines, and fixing ropes over the rough spots; but eventually our goal was attained, the only serious problem being the deteriorating weather. I shall never forget the view from the col, spanning the huge snow fields to the south, the imposing Cayangate wall of rock and ice to the north, and to the east, long glaciers originating at the col. As the glaciers wound down towards the jungle they changed from shimmering white to dirty brown, gradually being transformed at lower altitudes into curved swaths of black and grey which extended, like the roots of a massive plant, across the grasslands before burrowing deep into the soil. There was a feeling of absolute isolation, due in part to the effort required to get there, but intensified by the shifting mists, snows, and dense clouds from which the surrounding summits would emerge and disappear so abruptly that their existance seemed ethereal.

After these two ascents we returned to Base Camp. While Casey and Mike went for the mules, Steve, Earle, and I decided to try for a beautiful little peak situated at the top of a long steep glacier. It was shaped like a thin wedge, with deep ice-flutings on the face and great overhanging cornices along both ridges. Although probably not over 19,000 feet, it looked like a fitting climax to our summer's climbing. We referred to it as "Huayna Alpamayo" because of its resemblance to Alpamayo itself.

My original contention that the glacier would provide an easy route to the peak proved erroneous in the extreme because of an endless succession of wide crevasses, tenuous ice bridges, and the need for continuous belaying. The day of the summit try we were up at 5 A.M. and reached the col by the east ridge at 10. From that point the summit was about 800 feet above us, but the ridge was very steep, jagged, and corniced, with several pitches of bad rock. Steps had to be chopped the entire way, and

constant belaying was essential. Due to these difficulties it was 5 o'clock before the leader set foot on the summit.

We were able to rapel from the steep summit-cone in the vanishing light, and progress from there was slow but steady by judicious use of the flashlight. Far out over the jungle to the east, constant flashes of lightning gave an unearthly aspect to the proceedings by capturing our forms in successive grotesque positions, like a black and white movie run at very slow speed. At 2 A.M. the flashlight was accidentally dropped, and an impromptu bivouac would have been forced had not the crescent moon appeared at that very moment. Slow but steady progress brought us to the col and thence to our camp, where under the first rays of the morning sun we fell exhausted into a few hours' profound sleep. With the route selected, and light packs, we were able to make Base Camp the same day, and immediately decreed the summer's climbing at an end.

Summary of Statistics

AREA: Cordillera Vilcanota, southeastern Peru.

First Ascents:

Ccapana, 19,000 feet, 29 June 1957 (Merrihue, Jervis); 3 July (Merrihue, Jervis, Wortis, Hooker).

Pachanta, 19,000 feet, 16 July (Merrihue, Hooker).

Jatunhuma II, 19,000 feet, 8 July (Jervis, Wortis, Cronk).

Jatunhuma III, 19,000 feet, 8 July (Jervis, Wortis, Cronk).

"Horrorhorn," 19,200 feet, 9 July (Jervis, Wortis, Cronk).

"Shoe Peak," 19,500 feet, 13 August (Cronk, Jervis, Whipple, Merrihue).

Jatunrite, 20,050 feet, 14 August (Cronk, Jervis, Whipple, Merrihue); 15 August (Hooker, Wortis).

Unnamed peak near Ausangate, 18,000 feet, 24 July (Hooker).

Huayna Alpamayo, 19,000 feet, 20 August (Whipple, Merrihue, Jervis).

Second Ascent:

Campa I, 19,717 feet, 11 July (Hooker).

Attempted:

Jatunhuma, 19,994 feet, 8 July (Whipple, Hooker, Merrihue).

Ausangate, 20,500 feet, 25 July (Whipple, Merrihue, Jervis, Wortis).

(Altitudes are estimated as the survey data are not yet available.)

PERSONNEL: Caspar Cronk, William W. Hooker, Steven Jervis, Craig Merrihue, Earle R. Whipple, Michael Wortis.

An Unrealized Hazard

A Sermon for Mountaineers*

FRANK E. GAEBELEIN

IN THE little town of Moose, Wyoming, there is a log chapel. A small building, it is known far and wide, because behind the altar there is a spacious window through which the worshipper may see one of the grandest of mountain views—the jagged Teton peaks thrusting their snow-streaked spires heavenward. The church is named "The Chapel of the Transfiguration," after that strange and mysterious scene so vividely described in the New Testament, when Jesus went with Peter, James, and John to a high mountain—perhaps 9000-foot Mt. Hermon north of Galilee—where, while He was praying, His divine glory broke through His humanity, His face shone with the brilliance of the sun, and His garments gleamed with the dazzling whiteness of Alpine snows. And then, after a cloud came and overshadowed them, a voice spoke from the cloud, saying, "This is my beloved son; hear him."

Let this scene be a guide to our thinking about some of the intangible aspects of mountaineering. In regard to their religious background, a group of mountaineers generally presents a broad diversity. Yet Jesus Christ is not a denominational figure, but the Saviour of the whole world. Therefore, He is not the possession of any one church, and His truth is for all of us.

Every climber knows how fully a holiday in the hills brings refreshment from daily cares. The sense of physical renewal after days of hard climbing belongs only to those willing to pay a price in self-discipline. Nor are the rewards just physical; the perseverance gained through going on putting one foot after another when dead tired, the consideration learned through group effort, the subtle but powerful influences of mountain grandeur, even a quiet kind of courage—these are some of the deeper rewards.

There is, however, another aspect of mountaineering that calls for recognition. And that is its danger. The responsible climber knows the major natural perils, such as loose rock, unstable snow, thinly covered crevasses,

* Based on a sermon given at the annual Sunday service at the Goodsirs Camp of The Alpine Club of Canada in the Ottertail Range of British Columbia, 1 August 1954.

electrical storms. But by no means every responsible climber knows that the mountains also have their unrealized hazards. Ours is a fascinating recreation, laying compelling hold upon its adherents. A leading token of its power is the distinguished writing that it has stimulated. Other sports have their dedicated followers; few, if any of them, have produced a literature comparable to that of mountaineering. Yet in the very devotion that high mountains inspire there lies a hidden peril.

One November day several of us were scrambling up the fractured boulders piled over the summit of Mount Princeton in the Sawatch Range of Colorado. On a nearby ridge, slightly above us, was a sturdy figure, clad in windbreaker and shorts, ice axe in hand, climbing strongly to the top. We met on the summit, and, as we talked, spoke of climbing and what it meant to us. Our new acquaintance had driven many hundreds of miles through the night to climb this peak and several other fourteen-thousanders. And in answer to a remark about his obvious love of the mountains, he quietly said: "Mountains are my religion."

Now it would hardly be possible to put the chief spiritual hazard of climbing in fewer words than those. You see, such an affirmation or credo, which is by no means unique, betrays a confusion of values. For one thing, it rests upon a common but erroneous misreading of the opening words of the One Hundred Twenty-first Psalm, in which the hills, rather than the Lord who made them, are seen as the source of our help. Quite otherwise is the true meaning of these oft-quoted words, as the beautiful paraphrase by the Duke of Argyll so clearly shows:

Unto the hills around do I lift up
My longing eyes;
O whence for me shall my salvation come,
From whence arise?
From God the Lord doth come my certain aid,
From God the Lord who heaven and earth hath made.

Writing in *The Alpine Journal* on "Alpine Mysticism and Cold Philosophy," Arnold Lunn says: "Mountaineering is neither a civic duty nor a substitute for religion. It is a sport, for we climb not to benefit the human race, but to amuse ourselves . . ." And then he makes a wise observation: "All evil, as a great medieval thinker remarked, is the mistaking of means for ends. Mountaineering is not an end to itself, but a means to an end."

What, then, is the answer to this misconception in which the means is mistaken for the end and recreation substituted for religion? The answer comes from the mountains themselves, as they speak by implication to all who have eyes to see and ears to hear. Those who can discern behind the

geology of the great hills the Lord who made them cannot but learn the lesson of the reverential awe, the authentic fear of the Lord, that is the beginning of wisdom. This is a lesson that the world needs to learn all over again. For behind the problems of our times is the fact that men, having given up the fear of the Lord which humbles and ennobles us, have substituted for it the fear of man which enslaves our spirit.

But the voice spoke from the cloud on Mount Hermon and said: "This is my beloved Son; hear Him." The New Testament does not hesitate to make the tremendous spiritual equation of identifying the Son of God with the Creator of all things. In one of the most spacious sentences ever written, St. Paul puts it this way: "By Him [Christ] were all things created, that are in heaven, and that are in earth, visible and invisible, whether they be thrones, or dominions, or principalities or powers; all things were created by Him and for Him: and He is before all things and by Him all things consist." The spiritually sensitive climber in the Alps can hardly help being moved when he sees the cross on the summit of the Matterhorn and when he passes the wayside shrines on the trails to the high huts. For there is no incongruity in meeting these reminders of the Son of God in the high mountains. The Lord and the mountains belong together.

Mountains are great; we are small. Every climber has been reminded of this as he has seen another party on a glacier below him or on a ridge above him, looking like tiny specks in the vast landscape of snow, ice, and rock. And God is great, and we are small. In a higher realm than the physical, God is great in His infinite power and wisdom, in His enduring love and unchanging holiness. But we are small and finite, imperfect and unholy. Thus our littleness in comparison with the bigness of the mountains speaks of our need of help through Him who is the Rock of Ages.

On a May day in 1953 two men, Tenzing Norkey and Edmund Hillary, stood on the apex of the earth's surface. On the same day, men were doubtless at work in the deepest mine in South Africa. The differential between the deepest mine and the highest mountain is great. But whether on Everest's summit or in the deepest mine, men miss the stars. So it is with humanity in general. Despite differences in character and morality, all of us have missed the heavenly standard. As St. Paul says in a great universal statement to which none of us is an exception: "All have sinned and come short of the glory of God." Therefore, we need the Lord to whom the mountains point to do for us what we cannot do for ourselves and fit us for the glory of God.

In the Epistle to the Hebrews, there is a sentence that mountaineers can appreciate. J. B. Phillips, in his *Letters to Young Churches,* translates it like this: "It was right and proper that, in bringing many sons to glory, God . . .

should make the Leader of their salvation a Perfect Leader through suffering." There are many climbers skillful enough to ascend high mountains leaderless or guideless. But no man can reach God through guideless climbing in the journey of life.

One of the distinguished contributions to mountaineering in recent years is the Sierra Club booklet, "Belaying the Leader," with its precise tabulation of rope stresses and its classic exposition of the dynamic belay. Its beginning is impressive: " 'A leader,' wrote Geoffrey Winthrop Young, 'absolutely must not fall.' "

But the leader does fall; occasionally he does slip. We need constantly to be reminded that all human leadership—and this includes climbing leadership—is liable to err, as those of us who have seen a leader fall will never forget. But there is for this troubled age, beset with problems of a complexity undreamed of by other generations, a Leader who can never fall. Because He is the Perfect Leader, made so through suffering on the cross that He might bring us to God, we may reverently say, He needs no belay. And it is of this divine Leader that the mountains speak; through their greatness, they remind us of "the Lord who heaven and earth hath made." Silently but eloquently they are saying, "Hear Him." And really to heed their message will keep us who know and love the mountains from mistaking means for ends and substituting even the finest recreation for faith in the living God.

Snow Blindness*

BRADFORD WASHBURN

SNOW blindness is so incredibly painful that no one who has had it will ever willingly run the slightest chance of getting it again. If you've ever wondered whether you've had it, you haven't! And, unlike many uncommon ailments, it's extremely easy to describe to someone who knows nothing about it: If you were to lie down, open your eyes wide and then have someone put a teaspoonful of sand into each of them (and see to it that it remained there for at least 24 hours) this experience would give you a very accurate idea of what it feels like to be snow-blind.

Snow blindness† is temporary damage caused by ultraviolet light to the delicate outer layer of the eye—the incredibly thin corneal epithelium. Luckily, although it can be excruciatingly painful, the damage is never permanent and discomfort rarely lasts more than four or five days, even in the most severe cases.

Ultraviolet light is invisible, so the amout of *visible* glare on snow or beach has no direct relation to the amount of danger of snow blindness, though glare alone can tire one's eyes and result in a severe headache. Ultraviolet rays are filtered out quite effectively by dust and haze, so the clearer the weather and the higher you climb, the more UV you encounter. The higher the sun climbs in the sky, the less dust and haze its light must pierce to reach you, hence the lack of danger in the midwinter when the sun is never high except in the tropics. You don't have to look at the sun (or even near it) to be affected. The atmosphere has a miraculous way of dispersing these extremely short wavelengths of light so that at times the sky can contain three or four times as much UV as direct sunlight!

Except in relatively high altitudes (above 9-12,000 feet, where the dense haze of the lowlands is usually left behind), you aren't liable to get snow-blind unless you get a double dose of this UV energy, reflected from the surface of the snow as well as from the sky itself. Incidentally, if

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*This article, in slightly different form, was printed in *Sports Illustrated*, 1957, and is here reprinted by special permission. Copyright, Time, Inc.

†Snow blindness is exactly the same malady as "Klieg-eye" or "flash-eye" which come from overexposure to UV from arc lights in studios or during welding if protective glasses are not worn.

you've once been snow-blind you need be neither specially worried nor overconfident. Unlike the skin, your eyes won't tan or develop a resistance to UV, for no matter how many times you've been on a glacier or up a peak, your eyes will be just as susceptible tomorrow as those of a man who has never seen a snowbank in his life. Some people appear to have a very high tolerance to UV light, others must protect their eyes with special care. No one is immune.

Unfortunately, as in the case of sunburn, you never know when you are becoming overexposed to UV until it is too late. A number of short exposures within a single day are just as dangerous as if they had all been added into a single long exposure. Except in the case of extremely intense exposures (as in watching arc welding with no goggles), there is a "latent" period of several hours during which no pain is felt and your eyes appear to be virtually normal, though vision may slowly become cloudy and indistinct. Then things begin to happen fast. First, you feel slight irritation; then, as this increases, your eyes begin to cry, become extremely bloodshot, then stream uncontrollably. Within an hour after these first symptoms, your eyelids are red and swollen to a point where your eyes cannot be either opened or shut and they feel as if they are brimful of sand. The slightest light is painful (even through the closed and swollen eyelids) and every single involuntary effort to blink results in an intense jab of pain. This may last only a few hours or, as in a very severe case which I experienced myself in Alaska in 1933, it may totally incapacitate one for four or five days. Furthermore, the pain is so intense and constant that sleep or rest are virtually impossible. Even the strongest persons are utterly exhausted physically after even a relatively short siege of real snow blindness.

More bad news: Once you've got it, there is almost nothing that can be done to produce real relief. Do not use even the weakest local anaesthetics except when administered by a highly trained physician, as they may seriously slow down the healing of the delicate epithelium which has simply been sunburned. Cold (*not warm*) compresses and total darkness are easy to provide and yield some comfort. Every conceivable effort should be made to prevent scratching or other physical harm to the eye or lid, as a result of rubbing, or incessant touching with your hands—something which the incessant pain makes it almost impossible to prevent unless the eyes are kept constantly bandaged or covered with compresses. An occasional plunge of the whole head in cold water always affords real, but brief, relief. When an experienced doctor is not present, these simple rules plus *the passage of time* will do the job, as professional care

is not needed for snow blindness, if you don't further damage or infect your eyes with your own hands during the first few hours of intense pain. Luckily, the back of the eye (retina) is never affected, as the cornea absorbs all the UV before it gets there. The iris, which cuts down the amount of light entering the eye (like the diaphragm of a camera) lies *behind* the cornea and in front of the lens. Therefore the normal and involuntary closing of the iris in intense light does not reduce the danger of snow blindness at all, as it only protects the part of the eye which is behind the affected region.

What can you do to prevent all this? Just buy a *good* pair of sun glasses or goggles which will eliminate all the ultraviolet light—and wear them constantly. It's as simple as that. *The darkness of glasses has in itself no bearing on their capacity to filter out the UV,* even though this will reduce tiring glare. High-grade sunglasses (like American Optical's Rose Smoke lenses) do two things: they include an *invisible* dye which completely eliminates the UV, and they also have an inert but visibly colored dye which reduces the glare about 80 percent, allows the iris to open more, and helps to restore normal relaxed vision.

Large *glasses* which are designed to rest well up on the nose and near the face are better than goggles, as they permit better circulation of air around the eyes and minimize the annoyance of "fogging." Glasses of standard size and set forward on the nose do not give adequate protection in intense conditions, particularly in high altitudes on snowfields or glaciers. Goggles are only best in certain special situations—like ski racing—but do not afford any better UV protection than larger glasses, as all that the sides of the goggles accomplish is to prevent excessive circulation of air, snow, or dust around the eyes.

Snow-glasses are as essential a part of your skiing or climbing equipment as bindings, wax, rope, or ice axe. Buy good ones and *wear them.*

NOTE: This article is the result of 30 years of experience on high mountains and glaciers, afoot and on skis. The author has had one acute case of snow blindness himself (23 years ago) so he knows whereof he speaks. Practicing these simple common sense rules neither he nor any other member of his many Alaskan expeditions has ever had even a mild case since then. For further scientific details see: *"Clinical Neuro-Ophthalmology,"* by Frank B. Walsh, Baltimore, 1947, pp. 1276-1279; *"Textbook of Ophthalmology,"* by Sir Stewart Duke-Elder, London, 1954, vol. 6, pp. 6510-17; note by S. Holth, on "Goggles vs. Glasses," in *Ophthalmoscope,* February 1955, p. 71.

The Centenary of The Alpine Club

JOHN C. OBERLIN, HENRY S. HALL, JR., FRANCIS P. FARQUHAR

Some Englishmen made an ascent of the Finsteraarhorn on August 13, 1857 and talked over a favorite project as they went along—the formation of an Alpine Club. As a result of their decision to proceed, a dinner was held in Birmingham on November 6 and the organization of the Alpine Club was started on its way. Exactly 100 years later a dinner was held in London to commemorate the event—the founding of the first mountaineering club.

The Centennial celebration, however, included much more than a dinner, although that was indeed the climax. Preparations were begun well in advance and were carried on with remarkable thoroughness. One was almost led to believe that the Everest achievement itself was a well-planned preliminary. Certainly the undimmed luster of that event was a noticeable ornament of the occasion, agreeably brought to mind by the presence at the dinner of Sir John Hunt and the ever-smiling Tenzing.

To give permanence to the celebration several notable publications were brought to fruition at this time, all showing thoughtful planning, a vast amount of devoted work, and a very high standard of presentation. The editors of the *Alpine Journal* produced a special number consisting of a historical review, suitably illustrated with portraits, sketches, photographic views, and antique color-prints.* This was matched by "A Century of Mountaineering," written by Sir Arnold Lunn and presented by the Swiss Foundation for Alpine Research as "A Centenary Tribute to the Alpine Club." The third member of the trilogy of centenary publications consists of a monumental work by T. Graham Brown and Sir Gavin de Beer, "The First Ascent of Mont Blanc."

Another feature was an exhibition of pictures, manuscripts, and historic objects. Among the latter were the ice axe recovered in 1933 at an altitude

*Sir John Hunt, "After a Hundred Years"; J. Monroe Thorington, "As It Was in the Beginning"; D. F. O. Dangar and T. S. Blakeney, "The Rise of Modern Mountaineering, 1854-65"; H. E. L. Porter, "After the Matterhorn, 1865-80"; Geoffrey Winthrop Young, "Club and Climbers, 1880-1900"; R. L. G. Irving, "Unclouded Days, 1901-14"; Jack Longland, "Between the Wars, 1919-39"; A. K. Rawlinson, "Crescendo, 1939-56"; together with "Fifty Years Ago," by T. G. Longstaff, and "Alpine Controversies," by Sir Arnold Lunn.

of 27,650 feet on Mount Everest and presumed to have been Mallory's, the ice axe used by Tenzing on the 1953 Everest climb, and stones from the highest rocks of Everest, Nanda Devi, and Kangchenjunga. A number of historic diaries and letters were shown. The paintings, drawings, and photographs were very well chosen. There were portraits of past presidents of the Alpine Club, of royal mountaineers, and of guides and other famous climbers. North America was represented by photographs of Mount McKinley, Mount Logan, and Mount St. Elias. A group of action pictures of modern mountaineering rounded out the illustration of the century's developments. An informative catalogue was printed.

The international aspect of the celebration began with a meet held at Zermatt, August 19 to 29. On the 19th about 130 members and guests assembled for cocktails at the Hotel Mont Cervin at the invitation of Alfred Zürcher, a vice-president of the Alpine Club. The party then walked up the street to the Monte Rosa Hotel, where the village people gathered in welcome and the band played. John Hunt presided over the festive occasion and, calling on representatives of local, cantonal, and Swiss federal bodies as well as representatives of other mountaineering clubs, for remarks, responded to all in their respective languages. Wives of members dined with Lady Hunt at the Hotel Mont Cervin.

Brilliant weather the next noon saw a large gathering of members and their wives on the terrace of the Riffelalp Hotel as guests of the Seiler family for a *raclette* party—slabs of cheese melted before open fires onto boiled potatoes, with accompanying wines and delicacies. Climbing parties on the Matterhorn and other peaks were visible through field glasses and telescope. During the 12 days of the meet considerable climbing was done by many of the members, despite the variable weather. Hunt did several high climbs, among them the Younggrat of the Breithorn with a party that included Albert Eggler of the Swiss 1956 Everest Expedition. The meet did a great deal to promote good-fellowship among mountaineers from many lands.

The Centenary Dinner at the Dorchester Hotel, London, on November 6, was a brilliant affair. Over 400 members of the Alpine Club and guests attended. There was a large representation of mountaineering clubs from all over the world, including Switzerland, France, Belgium, Netherlands, Germany, Austria, Italy, Greece, Norway, New Zealand, South Africa, and Canada. Yuko Maki, leader of the successful ascent of Manaslu, came from Japan. The American Alpine Club was remarkably well represented: of the 30 members who are also members of the Alpine Club, 13

were present at the dinner.* The responses to the toasts were of an unusually high order. Toasts and responses were as follows:

THE QUEEN—Proposed by the *President,* Sir John Hunt.

THE ROYAL FAMILY—Proposed by the *President.*

THE ALPINE CLUB—Proposed by General Sir James Marshall-Cornwall, *President of the Royal Geographical Society.*

Response by the *President.*

THE MOUNTAIN CLUBS OF THE WORLD—Proposed by Sir Arnold Lunn.

Response by Monsieur Lucien Devies, *President, Club Alpin Français.*

THE GUESTS—Proposed by the Rt. Hon. the Viscount Hailsham, *Lord President of the Council.*

Response by Mr. John C. Oberlin, *President of the American Alpine Club.*

THE PRESIDENT—Proposed by Dr. Tom G. Longstaff, *Past President of the Alpine Club.*

The Centenary celebration was concluded on a high note with a reception in the Great Hall of Lincoln's Inn on the evening of December 9. Between six and seven hundred attended, members and their ladies in full dress. The Queen and Prince Philip were escorted by President Sir John Hunt and the Honorary Secretary J. H. Emlyn Jones.

*Eric C. Brooks (who represented the Alpine Club of Canada), John C. Case, O. Eaton Cromwell, Arthur B. Emmons, 3rd, Francis P. Farquhar (who represented the Sierra Club of California), Henry S. Hall, Jr., Charles S. Houston (a vice-president of the Alpine Club), Joseph E. Johnson, John C. Oberlin, Edward C. Porter, J. Monroe Thorington, Walter A. Wood, and Noel E. Odell. At Zermatt, John Case, Eaton Cromwell, Henry Hall, and Bradford Washburn were present besides Noel Odell and Bernard Pierre; at the December reception, besides Odell and Pierre, there were Case, Cromwell, and Terris Moore.

PLATE 26 *Photo Joseph Collins, Spokane.*

SOUTH ASPECT OF CHIMNEY ROCK. 7136 FEET.
N. Idaho Selkirks.

Photo by Bradford Washburn, 1942.

PLATE 27

REX GIBSON.

In Memoriam

E. REX GIBSON
1892-1957

The many friends of Rex Gibson were shocked to learn of the fatal accident on Mount Howson in the Coast Range on August 18, 1957. Rex was born on November 7, 1892 at Hatfield Peveril in England and after his schooling was completed worked in the family bank in Paris. He enlisted in September 1914 and received his commission in the Artillery in November of that year. He served with distinction throughout the war, being awarded the Military Cross and being three times mentioned in dispatches. Rex came to Canada in 1926 and started farming near Edmonton, Alberta, in the following year. He had done some mountaineering in Switzerland prior to this, his major climb being a winter ascent of the Jungfrau during a ski tour in 1925. He joined the Alpine Club of Canada in 1930, and had been its president since 1954. He became a member of the American Alpine Club in 1938.

His record of climbs is impressive. He made over two hundred ascents, including many firsts. He was among the few who had climbed the four 12,000-foot peaks in the Rockies of Canada. He had also visited the Selkirks, Purcells, Coast Range of British Columbia, the Interior Ranges of B.C., and the Cascades. His love for the mountains was a driving force, and he was ever eager to share his experiences with others. Many young people were introduced to the great hills and taught to listen to their voice under Rex's leadership. His skill in climbing was great and he conducted innumerable schools to pass on the law to others.

Rex joined the Royal Canadian Artillery in February 1941. He was Canadian Military representative with the Army's Mount McKinley expedition in 1942 to test cold-weather equipment. He was injured on this assignment and was retired on pension with the rank of major. In June 1948 he was married to Miss Ethne Gale, who was also a member of the American Alpine Club as well as the Alpine Club of Canada. He left the farm and moved to Vancouver Island.

Mountaineering was not Rex's only interest. He was an enthusiastic sailor and fisherman, a skillful carpenter and an expert axeman. For some years he ran a Scout troop. He was keenly interested in astronomy. He was a man of deep religious feeling and all who heard his sermons at A.C.C. camp services were impressed by his faith and sincerity. We have lost a

member of wide interests and many talents. He will be greatly missed by all who knew him. I would like to leave for him the lines he recalled himself when one of his climbing friends passed on, from Hilton Brown's "Coronach for a Mountaineer":

"The night falls dark on crag and corrie
Now, where the suns of noonday shone,
Homes the last eagle from his foray;
But—there *must* be mountains where you have gone;
Hills, great hills to be friend and foe,
Hills to comfort you, hills to cheer;
Wherever lovers of mountains go,
There as here,
Climb on, old friend, climb on!"

R. C. HIND

RICHARD N. MEYER

Many will remember Richard Meyer's story called "A Middle-Aged Mountain" that appeared in last year's *Journal*. This was the mellow account of a climber who had also mellowed, ascending a peak—the Ankogel—that had seemingly lost its harshness, too. But there is a story behind the story, because when Dick Meyer wrote his account of a peak revisited he knew that he had come down to the valley for the last time and had, in fact, only a few months left to live.

"A Middle-Aged Mountain" is a unique tribute to its author, reflecting in its gracious style and sophisticated humor the qualities that made Dick Meyer a gentleman even when faced with the certainty of his own disaster.

For those who knew him, it will be the fact of his complete decency that will always be remembered. He was tremendously competent, too. Whatever he undertook, professionally or in private life, was done truly well, for he had the good sense to leave to others tasks he was not cut out for. He could not, for example, drive a nail and therefore left this sort of thing to the handyman, but on the other hand he was a superb photographer, assembling a fine collection of pictures covering Madeleine's and his many travels. He climbed, skied, and golfed with equal skill. He became a member of the A.A.C. in 1951. Dick Meyer possessed a prodigious knowledge of history and the arts. The conversation when he was in the room was always enriched by this and his wonderfully witty sense of humor. Dick, among many talents, was also an extraordinary linguist, an ability which, while normally serving an important function in connection

with his work in the field of education and on his assignments in the diplomatic service, could also be used to provide hilarious entertainment, particularly when satirizing the speech and manner of some typical character. Many warm and touching things can be said about Dick, but they only further serve to describe someone who was truly a gentleman. In life he was regarded as such by all who knew him, an impression that could only have been eclipsed by one of the immense courage he displayed as the certainty of the end became daily more real. Dick left many wonderful things to remember him by, but it is the image of a courageous and gracious man that will always abide in the minds and hearts of those who knew him.

J. Bruce McWilliams

Climbs and Expeditions

EDITED BY H. ADAMS CARTER

UNITED STATES

Washington

New routes on Mount Rainier. The 1957 *American Alpine Journal* had barely been mailed when the article "The Climbing History of Mount Rainier" became outdated; for before the climbing season came to an end four new routes had been pioneered to the summit.

Mowich Face. Rising steeply in a nearly smooth wall of ice and incipient rock-ridges, about two miles across and 4000 feet high, the northwest face of Mount Rainier directly above the heads of North Mowich and Edmunds glaciers has long discouraged efforts to pursue a new route. For most of the summer months this vast 35° to 50° wall is swept by slithering snow-, ice-, and rock-avalanches and its usual aspect is one of smooth glare ice. (See *AAJ* 1957, photo: "Routes of Ascents on the West Side of Mount Rainier." The new route ascends directly above the head of Edmunds Glacier to Liberty Cap and is on the face north of the Sunset Ridge route.) On June 22-23, a few days after a fresh snowfall had thawed and refrozen on the upper slopes, an experienced party, composed of Fred Beckey, Don Claunch, Dr. Tom Hornbein, John Rupley, and Herb Staley, made the first attempt to scale this face. The party hiked in to Klapatche and St. Andrews parks from the West Side road and then climbed to the head of Colonnade Ridge, where an 8200-foot camp was pitched late that evening. At 5 A.M. the following morning they crossed the ice breakups of South Mowich Glacier to reach the base of the Sunset Ridge route. After ascending the lower snow slopes of this ridge, they traversed westward onto the upper reaches of Edmunds Glacier. Here long bergschrunds and crevasses forced them to contour to the center of Edmunds Glacier before they could begin the ascent of the face itself. Once above the upper bergschrund, their major problem was kicking steps directly up the ever-steepening face of crusty ice overlying powder snow. Axe belays and ice pitons were of little value in the crusty surface. The upper slope reached the angle of about 50° before rounding off toward the crest. Thickening clouds rose with the climbers, and at 2:30 P.M. when they reached Liberty Cap they found visibility so limited that their plans to descend via Tahoma Glacier had to be abandoned. Suffice it to

say that the descent of Mowich Face must be considered as great an accomplishment as the ascent.

Wilson Glacier Headwall. Few unclimbed and untried routes remain on the popular Paradise side of Mount Rainier. Wilson Glacier heads in a steep-walled cirque at about 10,000 feet and then flows into Nisqually Glacier below 8500 feet. Above the head of Wilson Glacier a series of steep couloirs climbs upward to join in a rather broad icefield pocketed beneath the 13,000-foot top of Wapowety Cleaver. Only 15 years ago this now quite inactive, ablated ice slope was a hanging lobe of thick ice fed by Kautz Glacier to the west. It terminated in an ice cliff which overhung the lower couloirs. Only the frequent slides of loose rock and fresh snow and occasional fragments of ice from the eastern end of the Kautz Ice Cliff down the couloirs attest to the former glories of immense ice avalanches. (See *AAJ* 1957, photo: "Routes of Ascents on South Side of Mount Rainier." The new route ascends about halfway between the Kautz and the Fuhrer Finger routes.) This route was first climbed July 20-21 by Pete Schoening and Dee Molenaar under ideal conditions, with a recent snowfall well consolidated to the ice and over the loose rock. We left Paradise Valley at 2:45 P.M., crossed Nisqually Glacier and ascended along the western edge of Wilson Glacier rapidly. After detouring around the right end of the bergschrund at the head of the glacier, we worked back and up into the central couloir, keeping close to the rock cliff at one side to avoid possible rock and ice debris. A 15-foot cliff across an avalanche-scarred constriction required delicate climbing on rock with crampons, made quickly with frequent wary glances upward. Once above this exposed gully, we climbed higher and into the protection of an overhanging rock wall. Here at 11,000 feet a narrow platform was leveled and a bivouac made at 8 P.M. After a restless but beautiful night we continued upward at 2:30 A.M. A steep diagonal traverse of the frozen snow-covered surface of the upper ice slope, followed by intermittent ice and rock climbing brought us to the top of Wapowety Cleaver by sunrise. The crater rim was reached at 6:15 A.M. After a brief pause we descended by the Gibraltar route, reaching Paradise Valley at 10 A.M.

Curtis Ridge. Without doubt the most frequently attempted and eagerly sought route on Mount Rainier over the past 25 years has been Curtis Ridge on the northeast side. Separating Winthrop Glacier from Willis Wall and Carbon Glacier, this steep and crumbling ridge has thwarted over a dozen serious efforts to go higher than 11,000 feet, merely by virtue of an almost continual barrage of rock which falls during all

periods of the climbing season. It was not until July 20-21 that two men from the Yakima Cascadians, Marcel Schuster and Gene Prater, found the favorable conditions under which to complete the ascent. Recent new snow had become well consolidated and offered a solid footing and a binding material to hold the rocks in place. (See *AAJ* 1957, photos showing the Curtis Ridge route. Continue the route-line to the summit dome above Willis Wall.) They followed the usual approach to lower Curtis Ridge via White River Campground, Glacier Basin, St. Elmo's Pass, and a traverse of the lower Winthrop Glacier. Camp was pitched near a small tarn at 8000 feet on lower Curtis Ridge. A reconnaissance that afternoon by Prater and Bob McCall, of the support party, showed frozen new snow covering the scree slopes above. The clean condition of the snow indicated that very little rock was falling. At 4:30 A.M. next morning Schuster and Prater left camp. A long rappel off the north face of the big gendarme at 10,300 feet was followed by a traverse upward along its north flank, which brought them to the knife-edged ridge. This sharp crest offered no problems from 10,000 to 11,000 feet, except for another gendarme and two more drop-offs. The crux of the whole climb was a rock cliff which intersected the ridge at 11,000 feet and had to be overcome with a shoulder stand, pitons, and stirrups. Above, progress was rapid and the next major cliff was by-passed to the right. An open snow slope and then a series of snow-filled gullies brought the climbers at 1:30 P.M. to 12,500 feet and the summit snow cap of Russell Cliff. Curtis Ridge was finally conquered. The ascent to the crater rim and summit was completed at 5 P.M. and two hours later Schuster and Prater rejoined their support party below St. Elmo's Pass after a descent via Emmons Glacier.

Kautz Cleaver. Point Success, the southwesterly of Rainier's three summits, and the only point above 14,000 feet which may be reached without touching glacier ice, was first reached by Stevens and Van Trump during their historic ascent of Rainier in 1870. Today Point Success is seldom visited, since until recently only one summit route ever traversed directly over this high point (Glascock and Dudley's Success Cleaver route of 1905). Two other rock ridges converge near Point Success: Tahoma Cleaver on the west, the last unclimbed ridge on the mountain, and Kautz Cleaver on the south. The latter rises steeply from the confluence of Success and Kautz glaciers, at 9000 feet, to converge with Success Cleaver at 13,000 feet. (See *AAJ* 1957, photo: "Routes of Ascents on Southwest Side of Mount Rainier." The route is on the right side of the picture.) The first two attempts were not made until 1957. The first

ended disastrously when one climber was seriously injuried during a fall into a crevasse on Kautz Glacier. A week later, on August 31, George R. Senner and Charles "Bud" Robinson of Seattle left Christine Falls (3667 feet) on the Longmire-Paradise highway and climbed via Van Trump Park up the rock ridge on the east side of Kautz Glacier. At 8000 feet they climbed up on the glacier and traversed upward above the icefall at 9000 feet, the scene of the previous week's accident. They scrambled to the crest of the cleaver at 9300 feet. Early next morning, from an airy 10,000-foot bivouac on a narrow ledge several hundred feet above Kautz Glacier, they crossed the cleaver's crest onto its broad back, its ascending snow finger, and its scree slopes to the cleaver's junction with the Success Cleaver route at about 12,000 feet. Here the two ridges merge and climb upward in a series of broad snow- and scree-slopes intersected by occasional down-sloping lava cliffs 10 to 20 feet in height. The two reached Point Success at 3 P.M. Because of the late hour, they did not continue to the crater's rim but returned as they had come up, reaching Van Trump Park as darkness fell. The climbers describe the route as devoid of technical difficulties but limited in bivouac sites.

DEE MOLENAAR

Ascents in the Cascades. In the spring of 1957 we completed some interesting new routes. On the sheer face of Castle Rock in Tumwater Canyon, which rises several hundred feet above the main highway near Leavenworth, Washington, Fred Beckey, John Rupley, and Klindt Vielbig did the "Saint Route," which involved some very difficult balance and direct-aid climbing on a part of the wall previously considered impossible. Fred Beckey, Dave Collins, and I did a new route, called "The Canary" because of the yellow coloration of the rock. It involved some very delicate 5th and 6th class climbing, taking about 25 pitons and two bolts. The route went up a very steep slab to a corner. Above this was a nearly vertical direct-aid pitch which led onto another platform. I took the next lead, which was crucial. It was necessary to work out to the outer edge of an overhang and work up a very precipitous and airy wall, which required two bolts. After getting up the worst, I came back and Dave Collins finished it off. Beckey, Rupley, and I did a variation of "The Catburglar," a delicate balance-climb. In May, Beckey, Rupley, Fred Ayres, and I made a new route in the Cashmere Crags on Prussik Peak, so called because of Beckey's rope-throw on the first ascent. We were lucky to find an easier way up the west ridge, though it required some class 3, 4, and 5 climbing; Rupley led the crucial 15-foot class 5

jam-crack. We also made another ascent of the overhang-studded Boxtop.

DON G. CLAUNCH

North Face of Mount Maude. On June 16, 1957 John Rupley, Fred Beckey, Herb Staley, and I made the first ascent of the 4000-foot wall on the north side of Mount Maude, a prominent 9100-foot peak in the North Cascades, situated between the headwaters of the Entiat and Chiwawa rivers, west of Lake Chelan. A cirque of three peaks, Mount Maude, Seven Fingered Jack, and Mount Fernow, presents a great castellated barrier headwall at the source of the Entiat River. A reconnaissance the previous year had led us to conclude that the long rock- and ice-face would probably be a climb of considerable technical difficulty. Because the rock of the area is of very poor quality and often extremely loose, we hoped to make use of a long 2000-foot ice sheet that rises from the glacier in the middle of the face to the summit.

On the 15th we drove past Entiat to the end of the Entiat road and began the 15-mile walk to the start of the ascent. After following the Entiat River trail about eight miles, we took a fork to the left and hiked in pitch darkness some three miles to camp near the end of the trail. To save time and effort we decided to walk to the col between Spectacle Buttes and the southeast side of Mount Maude, descend from Ice Lakes onto the slopes adjacent to the face, and climb upwards to the glacier on the face. This would be more direct than following the Entiat River to the meadows at its head and would avoid bushwhacking. Nearly 3000 feet of ascent of slopes and steep snow to Ice Lakes made us wonder if we had picked the right route, but our doubts vanished when we came over the crest and found nearby our long-sought face. The weather was matchless, and the cool breeze dried the sweat from our tired faces. Spectacle Buttes and the large cirque-faces of Seven Fingered Jack and Fernow were resplendent in their early summer beauty. Straining, you could just see at the end of the long Entiat River valley the shaded depression of the Columbia River, 50 miles away.

We descended steep snow-slopes to a snowfield leading upwards to the glacier. Somewhat later we stood at the bergschrund between the glacier and the final ice sheet rising some 2000 feet above. Prepared, by views of the face from the valley, for very steep and perhaps difficult ice and snow climbing, we set to. Fred led over the schrund and on up an ice groove. It was steep, yes, but not nearly as bad as expected, and with excellent snow conditions and good weather we made rapid progress. Fred and John were on the lead rope and Herb and I followed, belaying

frequently. Crampons helped immensely, although there was no ice exposed as would have been the case later in the season. The slope averaged from 40° to 45°, and near the top it was over 45°. It was a long, careful climb, but finally Fred kicked steps up the last steep slope. Soon we were all on the summit, basking in the sunlight and admiring the Glacier Peak area. After a leisurely rest we descended the easy east slopes and retraced our steps back the 15 miles to the car.

DON G. CLAUNCH

The Mole, Cashmere Crags. Bob Lewis and I climbed a new route on the Mole, the northeast face, during this past summer. The route begins on the north side of the great chockstone and involves a long class-6 crack-series to the first break in this wall. Later, another aid-pitch was encountered, this one an overhang where both wedges and pitons were used.

Half Moon Peak, Kangaroo Ridge. On October 20 Dave Collins, John Rupley, and I climbed the south wall of Half Moon Peak, one of the more inspiring faces in the Methow area of the Cascades. The climb had a variety of interesting problems, principally steep and sometimes rotten granitic cracks; higher, the rock became sounder and the climbing offered the variety of problems that steep layback and chimney cracks present. There was about 100 feet of class 6 climbing and 300 feet of class 5. We concluded the rappels down just before the oncome of autumn darkness.

FRED BECKEY

Wyoming

The Tetons. During the past two summers considerable attention has been given to the unclimbed routes and peaks of Grand Teton National Park. A short description follows of the climbs, from south to north, made this year or last and not previously reported.

Peak 10,535. The probable first ascent of this easy peak was made August 27, 1957 by Don Moser, William Edwards, and Robert Page, who approached it from the east.

Northwest Ridge of Buck Mountain. On July 16, 1957 John Dietschy, Dave Dingman, and Karl Pfiffner ascended this ridge which previously, in 1953, had been descended by the use of three rappels. The difficult gendarme between the west peak and the west summit was climbed directly instead of being by-passed on the north.

Disappointment Peak. In the past this peak has been better known for its fine summit view than for its prominence as a climb. Yet its south face, which extends for almost a mile, forming the north wall of Garnet Canyon, provides a variety of ridges and couloirs for the rock climber. Prior to the systematic attack during the past summer, only two of the ridges and two of the couloirs had been ascended. The new climbs are listed from west to east. *Caves Arête:* this ridge forms the right edge of the large southwest couloir which leads up from the Caves in Garnet Canyon to the summit plateau. On August 7, 1957 John Dietschy and Robert Larson found that the first 300 feet involved nothing more than scrambling, but the upper portion required seven moderately difficult leads. *Irene's Arête:* this fine climb, made by John Dietschy and Irene Ortenburger July 10, 1957, proved to be one of the most consistently difficult rock climbs in the park. The well defined ridge, the first east of the Caves Arête, may be seen in profile when looking from the Caves. The top of the ridge is separated from the summit plateau by a sharp notch which can be passed on the east. The seven leads get progressively more difficult and required seven hours. *Central Buttress:* two different routes were made on this large buttress, the first by William and Evelyn Cropper and Jim Langford on June 29, 1957, the second by John Dietschy and Jim Langford on July 23. The first, in ascending the buttress spirals from the east to west, whereas the second spirals from west to east. Both routes were moderately difficult. *Dissatisfaction Arête:* John Dietschy and Jim Langford, on July 22, 1957 climbed this curved ridge, which is immediately west of the Surprise Lake outlet-stream which crosses the Garnet Canyon trail. After three leads directly up the crest, an overhang forced them onto the west wall of the ridge. One pitch higher another overhang necessitated the use of direct aid before they rejoined the crest a rope-length above. The difficult final 110-foot lead required some tension climbing. *East Face Chimney:* the smooth slabs of the east face of Disappointment Peak, which rise directly above Amphitheater Lake, had never been tried prior to the ascent of Harvey Carter and Robert Beck on July 2, 1956. A chimney in the center of the face required several pitons for safety.

South Ridge of Fair Share Tower. From the Caves this ridge can be seen just to the left of the gully leading to the Red Sentinel. John Dietschy and Irene Ortenburger, July 9, 1957, made this enjoyable climb on good rock over the tops of an unnamed pinnacle, Fair Share Tower, and Pemmican Pinnacle to the Dike Col.

South Ridge of Teepe's Pillar. Willi and Jolene Unsoeld and Norman Lee followed on August 10, 1957 the extreme southeast ridge of the triangular south face, using small ledges which overhang the face. The third lead, a very difficult pitch, was the crux of the climb. The most interesting portion of the ascent was the first four pitches; the remainder was enjoyable but not difficult.

Variation on the East Ridge of the Grand Teton. The crest of the east ridge was reached August 11, 1957 by William Cropper and Jim Langford by ascending the subsidiary ridge which leads from Teepe's Glacier to the gendarme immediately east of the Second Tower. This ridge forms the eastern edge of the hanging couloir high on the southeast face of the Second Tower. The main obstacle of this ridge, an 800-foot nearly vertical section of gray rock, was passed by means of a ledge slanting very steeply up from west to east across the ridge crest. The remainder of the ridge was climbed on its east side until the notch between the gendarme and the Second Tower was reached, after which the usual east ridge route was followed to the summit.

Northeast Face of Teewinot Mountain. William and Evelyn Cropper and John Dietschy climbed this impressive face July 13, 1957 directly up its center. This significant new route proved to be moderately difficult.

The Rabbit Ears. These two pinnacles lie near the center of the northwest ridge of the Grand Teton, which forms the western boundary of Valhalla Canyon. On July 17, 1957 Fred Ayres and Leigh and Irene Ortenburger found the south pinnacle exposed and sharp but not difficult. It probably had been climbed before by one of the two parties which had ascended the northwest ridge of the Grand Teton, or possibly by Hans Kraus's party in 1945. The north pinnacle, however, was overhanging on *all* sides. Many pitons for direct aid were used by Fred in his fine lead up its north ridge. The absence of a summit cairn or a rappelling piton or sling indicated that this was a first ascent of one of the more spectacular pinnacles of the park.

Cascade Pinnacles. These three easy pinnacles lie directly west of the Ice Point-Symmetry Spire saddle and are at about the same altitude. They were climbed July 22, 1957 by Fred Ayres and Ellis Blade in an attempt to find the difficult and elusive Stanford Pinnacle, which, after its first ascent in 1947, had apparently disappeared. (Later in the summer it was rediscovered.)

Northeast Face of Symmetry Spire. This route, climbed by John Dietschy and Dave Dingman July 24, 1957, differs from that climbed in 1953 by Roald Fryxell in that it is just north of the northeast chimney; Fryxell's route was further around on the north and northwest faces. Three pitches led to a belay stance below the light-colored overhanging bulge about halfway up the face. Direct aid from three pitons was necessary to pass this overhang, after which one difficult lead and then several easier ones brought them to the top of the north pinnacle and thence easily to the summit.

East-Southeast Ridge of Symmetry Spire. John Dietschy, Dave Dingman, and Karl Pfiffner on July 30, 1957 climbed this new route, the first ridge to the east of the Jensen Ridge. This ridge ends on the east ridge, which they then followed to the summit.

North Ridge of Peak 11,585. The northern aspect of this peak has two facets, a concave north face and a spectacular northwest face, both of which probably have too much rotten rock for good climbing. The separating ridge, however, is of excellent rock and rises from the canyon floor in four steps of moderate difficulty. William Buckingham and Barry Corbet on August 16, 1957 ascended this ridge, the first climb on the north side of the peak. A pinnacle at the base of the third step provided an interesting climb. They climbed the summit wall directly over steep slabs to the regular summit ridge.

South Ridge of Drizzlepuss. On July 6, 1957 William Cropper and John Dietschy took ten hours to climb the sharp ridge from Leigh Canyon to the summit of Drizzlepuss, the well known pinnacle at the base of the east face of Mount Moran. They avoided the two great vertical steps, the first by a diagonal ledge on the east side of the crest, the second by a very curious, almost horizontal, crawl-space along its west side.

Southwest Ridge of Mount Moran. Between the many-stepped south and west ridges of Mount Moran there is only one other, the long southwest ridge which leads directly to the summit plateau. John Fonda, Dave Dingman, and Karl Pfiffer climbed this from a camp at the first lake in Leigh Canyon. Although the first 500 feet required considerable care because of rotten rock and many overhangs, the middle portion slants back at a more comfortable angle and the rock is solid. The last part of this long climb is a series of small towers and large steps on the crest of the

ridge. They passed the first of these on the south and the last two or three on the north.

Peak 11,962. On July 13, 1957 Yvon Chouinard and Bud Ewers finally made the first ascent of this peak, a northern sub-summit of Mount Moran. All four previous parties that had climbed the north ridge of Moran had by-passed it. It is the moderately difficult lower portion of the north ridge, climbed by all the parties, not the easy upper parts, which prevents easy access to this peak.

The Image. This northern offshoot of the Bivouac-Raynolds ridge was first climbed by Jack Davis, Redwood Fryxell, Nick Ellena, and Julie Peterson August 20, 1957 by the moderate northeast ledges. This is the higher and more southerly of the two Images, so named because of their reflections in Hanging Lake.

The Counter-Image. The lower and more northerly of the two Images was first ascended August 9, 1956 by Sherman and Lillian Lehman. They traversed the peak, ascending the east face and descending the west.

Peak 10,611. On August 22, 1957 Jack Davis, Redwood Fryxell, and Julie Peterson made the first ascent of this peak, east of Rolling Thunder Mountain, by its southeast ridge.

Mount Robie. One and one-half miles north of Ranger Peak is a flat topped summit (10,850 feet), the east ridge of which was climbed from Jackson Lake June 23, 1957 by Leigh and Irene Ortenburger. A cairn but no record was found. A difficult unexpected tower blocked an otherwise easy ridge. We rappelled to by-pass the tower on the south and then climbed it through a notch which separated it from the mountain. The long ridge was then traversed to Ranger Peak. On June 24 we also made the first ascent of a small sedimentary peak, immediately west of Ranger Peak, by its rotten east ridge.

Peak 11,251. The first ascent of this double summit was made June 25, 1957 by Leigh and Irene Ortenburger during a traverse from Doane Peak to Eagles' Rest Peak. The name, Anniversary Peak, was given to the mountain.

West Ridge of Eagles' Rest Peak. Since the two previous ascents of this peak were made from the east, the west summit remained unclimbed until Leigh and Irene Ortenburger climbed it via the long west ridge

extending from Anniversary Peak. We found the west summit probably no more than five feet lower than the east summit. The traverse onto the east summit involved the ascent of a particularly rotten chimney which led to the north ridge just short of the summit. We descended from the col between the two summits north down a snow couloir into Waterfalls Canyon.

LEIGH ORTENBURGER

North Face of the Devils Tower. After a thorough reconnaissance, Jim McCarthy and I proposed to put a route through the only remaining unclimbed face of the tower, the north. The climb followed a single crack from the easy base slabs to within one pitch of the top; once committed to the climb, we had no real choice of route. The first pitch, largely 5th class, we found had been about three-fourths completed by an Army team, which, although it had turned back, had conveniently left its iron in place. Jim took the next lead, on which the angle increased considerably. At a bulge 15 feet above me an aid piton pulled out; fortunately the second piton held, stopping a 10-foot fall for Jim without serious physical damage. Jim continued ahead, using double-rope and stirrup techniques. Taking the lead I entered the high angle face of the tower, where we relied entirely on stirrups. At the next belay we made grateful use of a specially prepared aluminum platform, which allowed us a comfortable stance where otherwise we would have had an extremely inconvenient stirrup belay. Jim led through, proceeding up the increasingly severe crack and setting up a similar platform belay with the aid of a bolt. Unfortunately the crack had widened more than we expected; this, together with the friable nature of the rock, made virtually all pitons useless excepting two specially wide-angled ones. The next pitch, and the last on the sheer face of the tower, became the key to the climb. A small bush and a hidden crack allowed me to reach the first ledge in four moves. It offered space for but one foot. Jim led through, climbing free, up the rotten and difficult chimney which our erstwhile crack had become. Rapidly he reached a spacious and level ledge for an appreciated rest from the earlier tension and effort. The final pitch offered no problems other than a few steps on the face directly above the belay. We had completed 12 hours of exposed and extremely severe continuous climbing. A moonlight descent by the normal route we perhaps failed to enjoy to the full. We feel that our north face route was somewhat more severe than our 1955 west face route, but the absence of direct sun minimizes the heat problem.

JOHN RUPLEY

California

Northeast Ridge of the Thumb, Palisade Group, Sierra Nevada. The Thumb had never been climbed from the east or northeast by any of the nine parties that had ascended the peak prior to 1957. From a high camp on the southern Middle Palisade Glacier, Leigh and Irene Ortenburger noticed a deep couloir leading up the northeast side of the peak to the northeast ridge. This we climbed September 12, 1957. Three chockstones provide interest but no real difficulty. We abandoned the couloir near its head and climbed the wall to the right to gain a knife-edged ridge which led directly to the main northeast ridge. The climbing was exposed and enjoyable until the final step was reached. Here it was necessary to work out onto the left face of the ridge, where an interesting system of ledges led upwards. Once this was passed, we easily reached the summit, which affords an excellent view of the southern portion of the Palisades. On the descent we rappelled to pass the steep step in the ridge.

LEIGH ORTENBURGER

ALASKA

Attempt on Mount McKinley. On June 25 an eight-man expedition sponsored by The Mountaineers, consisting of Jon Hisey, Jerry Cate, Alan Van Buskirk, Larry Heggerness, Aldon Haug, LeRoy Annis, Larry Annis, and Kenn Carpenter (leader), arrived at McGonagall Pass eight days from Wonder Lake, enroute to Mount McKinley by the usual Muldrow Glacier route. Three of the eight days were used crossing the mile-wide McKinley River whose illogical antics caused several near tragedies. Some 20 channels across its width were between two and five feet deep, and their depth changed seemingly by the hour as the swift current ate out one and filled up another. Equally frustrating was the irregular water level which rose 16 inches in a 20-hour period, and at one time four inches in two hours. Since rainfall was negligible, the strange run-off can only be attributed to the phenomenal glacier conditions on the Muldrow.

At McGonagall Pass a *new* and disheartening Muldrow Glacier stretched for miles before us. Where last year's photos show a relatively smooth glacier, there was now a continuous maze of jumbled séracs and huge crevasses 50 feet wide that stretched half a mile across the glacier. In many places the glacier had dropped hundreds of feet, as if a huge melt-cavern underneath had collapsed, leaving a 500-foot ice cliff clinging to the north valley wall, the ridge on which we were standing. With dimmed hopes we selected a route up the glacier edge, always traveling on top of the hanging ice cliff with the ever present drop-off on our left. Eight

miles up the glacier and four days later we unanimously called it quits. Beyond this point, because of impending rock cliffs, we would have to go up the middle of the glacier, but there we could see absolutely no feasible route. Moreover, the hanging ice cliff by which we had just traveled was daily deteriorating. Gigantic chunks of ice, some the size of a small house, were breaking off with great regularity to go booming down to the glacier below.

On the return, two days were spent at Gunsight Pass making observations. The low point of the main glacier here was 830 feet below the pass, with the ice cliff consisting of an upper 260-foot pitch and a lower 250-foot pitch separated by a shelf 350 feet wide. From the pass we climbed Gunsight Peak on the north, and on June 30 the first main peak on the ridge to the south. Thirteen gallons of kerosene were cached at Gunsight Pass.

KENN CARPENTER, *Mountaineers*

Ascents above the Lower Muldrow Glacier, McKinley Range. Our group was unusual because of age. Leaving me out, but counting our "old men"—Harvard graduate students Harold Boeschenstein and Roger Dane, and the latter's wife Lee—our average was only 19 years. The others, Douglas Bingham, James Estabrook, Francis Blake and Barrett Morgan, were all schoolboys. We were there at an interesting time, for the normally stagnant, black lower Muldrow Glacier was in utter turmoil. Something, possibly an earthquake, in the spring of the year had apparently upset the equilibrium of the glacier and had set it in headlong motion, in much the same way as the Black Rapids Glacier in 1937. Aerial photographs show an unprecedented rate of advance. The usually flat surface of the lower Muldrow was contorted into an unstable, everchanging gallery of huge, fancifully sculptured séracs. Different every day, we found black and white pandas, busty old women, white rabbits with long ears, even a black mammy helping her pickaninny up the cliff. On the central Muldrow these grotesque statues crashed continually into the fingerlike acres of blue lakes formed by trapped melt-water which could find no exit.

On June 23, 1957 we left the road to Wonder Lake at Mile 87½ to pack our supplies 15 miles up the eastern trough of the Muldrow to Base Camp in a flowery meadow at the foot of Anderson Pass. The pack route was good; it rained every night but never while we were working. On June 30 we set up Base Camp in the shadow of icy peaks that rose 5000 feet above us.

Although worried that the side glaciers which enter the Muldrow might

impede our progress, on July 2 we continued up the Muldrow trough towards Mount Mather and Mount McKinley. We could not so much as set foot on the unstable ice of the Muldrow itself. After having worked our way across a half dozen side glaciers, we were stopped on the second day by the seventh. This one, now a hideous confusion of churned-up ice, enters the Muldrow beyond the ridge that rises directly to the summit of Mather (12,125 feet). A thunderstorm mercifully drove Dane and me back from a reconnaissance up this unpromising steep ridge of Mather, where rotten rock unbelievably defied gravity. We joined our companions in camp on a tiny ice shelf overhanging the Muldrow. Between rain squalls the next day, we moved camp up onto the next ridge in the direction of Base Camp. At 7500 feet we were within one day's striking distance of Mather, though a 10,000-foot unclimbed peak intervened. In gloomy weather next morning Dane and I reconnoitered this new ridge, found a route up the cliffs on rock less rotten than that of two days before and continued up the snow and ice ridge to just below the 10,000-foot summit. Since this new route up once-climbed Mather seemed feasible, we turned back there to avoid robbing the others of the first ascent of the intervening mountain. As we reached camp, a brilliant show of lightning heralded a storm that raged for three days without let-up. On the eighth day of this trip, we had no choice but to return to Base Camp, for we had no more food.

The weather bettered as we approached Base Camp and July 10 dawned crystal clear. We attacked the central of the three ridges that descend the north face of unclimbed Peak 8620, just southwest of Anderson Pass. To 6400 feet the climbing was easy. There the knife-edged ridge turned abruptly skyward and for the next 1000 feet averaged a measured 54°. To our dismay this was not firm snow, as it had appeared, but blue ice covered by eight to twelve inches of unconsolidated ice-crystals overlain by four to six inches of new snow. Belayed through ice pitons, we hacked away the treacherous surface to clear firm ice for our crampons. This stretch took us six hours of incessant step-chopping! The last 1200 feet of the climb were steep but straightforward. Few mountains can boast such a view as the one up the Muldrow and over the summit of Mather to the soaring twin peaks of Mount McKinley. It was a 17½-hour round trip. Two days later we made the first ascents of two other glorious viewpoints, the peaks on the northern side of Anderson Pass. Our party packed out in murky overcast and reached the road July 17. Our trip to the Ruth Glacier side of Mount McKinley is covered elsewhere in this *Journal*.

ADAMS CARTER

Moose's Tooth, Mount Huntington, and Mount Barrille. An expedition, led by Fred Beckey, whose members included John Rupley, Herb Staley, and others, was landed by the pilot Don Sheldon on the southeastern side of Mount McKinley at the foot of Mount Huntington (12,240 feet). Though they reached the crest of the main ridge, they could not complete the ascent. They also failed to ascend the spectacular Moose's Tooth (10,335 feet) but made the second ascent of Mount Barrille (7650 feet).

Chugach Mountains. During June and July 1957 most of the high peaks at the head of the great Columbia Glacier in the central Chugach Mountains were climbed for the first time. Before our 1955 and 1957 expeditions to this area, it was probably the least explored and most inaccessible mountain region in Alaska. The 1957 party consisted of Dr. Lawrence Nielson (leader), Arthur Maki (co-leader), David Bohn (photographer), 1st Lt. Martin Mushkin, and Don Mokski. Layton Bennett, Anchorage bush pilot, flew us from the Glenn Highway north of the mountains and landed us at 6500 feet on the Columbia Glacier with a wheel-ski equipped Piper Super Cub plane. Base Camp was established at 7600 feet by airdrop.

On the semicircular ridge that forms the divide between Harvard and Yale glaciers rise three peaks which we named, from south to north, Edison, Elusive, and Gilbert Lewis. Mount Fafnir lies about three miles east of the latter. Mount Valhalla is two miles north of Fafnir. All these names and altitudes are unofficial.

From a glacial valley north and west of the main summit, the entire party climbed Mount Einstein (11,552 feet) June 17 along the spectacular northeast ridge. Einstein is the most prominent of the high peaks seen from Prince William Sound. Mount Elusive (11,525 feet) was climbed June 22 by its knife-edged south ridge, although the part just below the summit was dangerously corniced. Mount Witherspoon (12,023 feet), reportedly the highest peak in the area, was climbed June 25 from a camp at 9300 feet on the east slope of the mountain. We climbed the south summit (11,300 feet) by a route similar to the one we used in 1955.* This peak is connected to the main summit by a fantastically sharp ridge with exposure of several thousand feet, in places corniced and broken by two great blocks of ice. As some of us had had enough after an hour or two of this ridge, we returned to the south summit. After climbing down the west side of the south peak and crossing a branch of Yale Glacier,

* Robert West, "In the Chugach Range, Alaska," *AAJ*, 1956.

we reached the main summit by the corniced west ridge. The Witherspoon climb required 16½ hours.

Mount Valhalla (12,000 feet), the most spectacular peak in the central Chugach Mountains, was climbed July 1 from a high camp among the crevasses of the glacier basin between Mount Elusive and Mount Fafnir. It was the most difficult peak attempted. The only feasible route led over the south summit and then along the great knife-edged ridge to the main summit. The slope on the eastern side of the ridge is so steep that snow never clings very long to the 3000-foot face. This route is safe only under ideal snow conditions. We reluctantly turned back from both the relatively easy Mount Edison (11,600 feet) and Mount Gilbert Lewis (11,900 feet) because of dangerous wind-slab conditions. Only 300 feet from the summit of Gilbert Lewis we heard two loud cracking sounds and felt the snow jerk under our feet. We were fortunate to be able to climb off the mountain rather than to be carried down by an avalanche.

We also made meteorological and glaciological observations and did some rough mapping. We made a study of one of the largest ice avalanches ever reported; ice streams up to 40 feet high extended for a mile out onto the glacier below the cliffs of Mount Edison. A crevasse several hundred yards long formed in front of our tents. The birth of this crevasse was accompanied by a sharp cracking sound and a jerking of the glacial surface like a violent earthquake. The crack widened an inch or two a day, the lower edge rising a similar amount with respect to the uphill edge. Out of 25 days on the glacier there were 16 in which we had snow and 17 of fog. However, for the Chugach Mountains, we had exceptionally good weather. In 1957 there was only one bad storm with about three feet of fresh snow; in 1955 we experienced much more violent storms.

LAWRENCE E. NIELSEN

Mount Michelson, Brooks Range. On April 23, 1957, John P. Thomson, of the Fairbanks *Daily News-Miner,* and R. E. "Pete" Isto, resident topographic engineer with the U. S. Geological Survey, Fairbanks, made the first ascent of Mount Michelson, highest point in the Brooks Range. This 9239-foot mountain is at latitude 69° 19′ N., longitude 144° 16′ W. No other prominent peak lies as far north in continental North America as this igneous monadnock. It is only 50 miles south of the Arctic Ocean near the eastern end of the 500-mile-long Brooks Range. Arrangements for air transportation were made with Horace Black, an experienced Alaskan bush pilot. The starting date had to be timed early enough so that his 150-hp ski-equipped Piper Tri-pacer plane could still be used from the Fairbanks

airport and yet as late as possible, since temperatures in that mountain region in April can reach —35° F. It turned out that our landing on the return trip was the season's last ski-landing for Fairbanks International Airport.

At daybreak, April 22, the party, plus about 200 pounds of equipment and food, were loaded into the plane. Four hours and twenty minutes later, which included a refueling stop at Fort Yukon, we landed on the overflow ice of the Hulahula River about 16 miles northwest of the mountain and 330 miles northeast of Fairbanks. The pilot returned alone, with instructions to pick us up there a week later. We cached an extra week's food in a metal bear-proof container in case weather should delay him and started the 7700-foot ascent. Each carried a 60-pound pack, plus bearpaw snowshoes, and we had a small litter-sled. After a few hours' climb, we cached sled and snowshoes because of the scarcity of snow on the wind-exposed rocky slopes. Several times later we regretted this decision when we struggled waist-deep in the powdery arctic snow. This area has a mean annual rainfall of only five inches, but subtracting the summer's rainfall of about one inch it leaves an accumulation of four feet of snow, which at this latitude usually remains soft and uncrusted. We camped that night early at 4000 feet.

At 2:30 next morning we set out again, establishing Base Camp at 10 A.M. on a boulder-strewn plateau midway between the Hulahula River and the summit. From there we climbed steadily until we reached the summit shortly after nine that evening. We encountered no difficulties, although we used the climbing rope on several miles of sparsely crevassed glacier. The last 800 feet of ascent was up a 45° ice slope, which required step chopping. We reached the summit just as the sun was setting, a magnificent sight, with the red hue directly across the 500-mile length of the whole Brooks Range. Since Thomson's feet showed signs of freezing, we limited the time on top to 15 minutes. We built a small rock-cairn over a plastic match case with our names in it. We reached Base Camp six hours later and discovered that Thomson's feet were frozen. The next two days were spent resting there, nursing the frozen toes and fashioning a pair of crude mukluks from woolen socks, woolen underwear and an outer cover of canvas poncho, all tied together with nylon parachute cord; Thomson could no longer wear his regular footgear. Shod thus, he was able, on the 26th, to descend the eight miles to the Hulahula River landing point, where we waited for 2½ days for the return of the airplane. The condition of Thomson's feet required cancellation of the plan to climb Mount Chamberlain (9131 feet), the second highest peak of the Brooks Range, which lies about ten miles southwest of the landing point.

Because of its remoteness, the Brooks Range is one of the last frontiers left in North America for those who wish to conquer unclimbed peaks. There are literally hundreds of unclimbed and for the most part unnamed mountains. It is incredible that in this uninhabited area, where signs of human occupancy are non-existent, we saw practically no animal life. Tracks indicated the presence of large bear and mountain sheep—one night a wolf came within 100 feet of our tent—but we saw none of these animals. The only sign of human visitation was axe marks on willows which some Eskimo probably cut many years ago.

R. E. Isto.

CANADA

St. Elias Range, Yukon Territory. Members of the Sierra Club of California, Los Angeles Chapter, Jim Sutherland, Don Clarke, Bud Bingham, Barbara Lilley, and George Wallerstein, joined Bill Davis of the Colorado Mountain Club in Whitehorse August 3, 1957, for a month's climbing in the St. Elias Range. By rented car and truck we transported our 1200 pounds of food and equipment from Whitehorse to Burwash Landing on the Alaska Highway. There we loaded most of this equipment into a bush pilot's pontoon-equipped plane and airdropped it at three locations: at the head of Brabazon Glacier, at the source of the Klutlan River, and on a 13,000-foot plateau below Mount Wood. The third drop was never recovered. We were flown into a small lake near Klutlan Glacier. Three and a half days of hiking along Klutlan, Wood, and Brabazon glaciers brought us to our airdrop on the Brabazon, where we set up Base Camp at an elevation of about 8000 feet.

The first climb, of Peak 12,000 west of Base Camp, was made in a 14-hour day by circling behind the peak, threading through one icefall and bypassing a second on rock to reach the final snow slope leading to the summit. On the first day of a four-day trip we placed a high camp at 10,000 feet below Mount Craig (13,200 feet). On the next our attempt on that mountain by its east ridge was stopped by an ice cliff 200 feet below the summit. On the third, the steps already kicked in the deep powder snow up to the ridge helped us on a successful climb of Peak 13,500 on the same ridge and east of Mount Craig. On a three-day trip another high camp was placed on a 10,000-foot col east of Base Camp, overlooking a branch of Wood Glacier. From there we climbed the steep north ridge of Peak 13,800, south of the col and west of Mount Wood, breaking trail through one to two feet of powder snow. A climb was also made of Peak 11,500, north of the col, by its south ridge, knife-edged enough to warrant belays, à cheval climbing and the only use of crampons on the trip.

After returning to Base Camp, we abandoned it permanently and moved down the Brabazon and up Wood Glacier to the col east of Mount Wood on the Wolf Creek Divide. From here we ascended Peak 10,000 by its west ridge, but lack of time and deteriorating weather forced us to abandon an attempt on Mount Wood. Returning down Wood and Klutlan glaciers to the source of the Klutlan River, we recovered the airdrop there, which contained a rubber life-raft and jackets, and floated cold and wet on an occasionally thrilling ride down the Klutlan and White rivers to the Alaska Highway. We hitchhiked back to Whitehorse in time for our return flight home on August 31.

BARBARA LILLEY

Mount Northover, French Military Group. On June 29 a Calgary Section party of the Alpine Club of Canada, about 25 people, left the power dam at Upper Kananaskis Lake and walked around the lake to camp about a mile above Fossil Falls. On June 30, Isabel Spreat, Peter Rainier, Sev Heiberg, Pat Duffy, and I left camp at 7 A.M. to make the first ascent of Mount Northover (9600 feet). We followed the south ridge and reached the summit at 11 A.M. One knife edge, inclined at 40°, and a pitch of slabby rock of about 50 feet formed the only difficulties. Descent was by the same route.

R. C. HIND

New Routes on Monkhead and Llysfran, Maligne Lake. The Iowa Mountaineers' 1957 summer climbing Base Camp was held at Maligne Lake August 13 to 28, 76 persons participating in the outing. A new route on Monkhead (10,535 feet) was led by Toni Messner, with Hans Gmoser and Allen Auten. The ascent was made by the prominent couloir in the north face, which is visible from Mount Paul. Delicate climbing over a shaly band above the couloir (mud and scree) was required to reach the shelf above the imposing cliffs which surround the peak. They climbed the north glacier and traversed on the east side of the peak to the snow slopes of the southeast side, which led to the summit plateau. Auten suffered a minor knee sprain at this point and waited while Messner and Gmoser completed the ascent. On the return the party skirted the shelf above the lower cliffs in order more completely to scout the peak and to avoid the descent over the shaly band. In this way they reached the gradual slopes near the moraines of Brazeau Glacier. The final return was through woods at the base of the cliffs. The descent was probably the same as that used by the Gibson party in 1950. The round trip time was 14 hours, by a very fast party.

The new route on Llysfran Peak was made by Toni Messner and Warren Pagel, the former leading. They climbed past the lake, called Ultramaligne Lake in the 1939 AAC account, between Mount Julien and the unnamed outlier of Mount Mary Vaux. They then ascended the steep wall between Julien and Llysfran, northeast of the peak. The climbing was difficult, but the rock was sound. A piton was used at one point for security. The ridge was then traversed south over the summit of the peak as a storm was approaching. The descent was made by the headwall southeast of the peak over sections of rotten rock. The round trip time, including the boat trip to the approach point, was 16½ hours, by a very fast party.

JOHN EBERT

Homathko Snowfield, Coast Range. On July 27, 1957, Richard H. Beatty and I arrived in Princeton, B. C., where we met our friends Alistair Morrison and John Rucklidge, of Cambridge University, England, and with some difficulty continued by car to the head of Chilko Lake. From there we had arranged boat transportation to the end of Franklin Arm, 50 miles down the lake, but beyond we were solely dependent on backpacking. Ten miles of dense burned-over bush in the steep valleys of Dechamps and Nine Mile creeks and a high ridge and glacier still separated us from the deep north-south valley on the eastern edge of the snowfield. So great were the obstacles on this approach that it took us nearly two weeks to complete the two trips required to bring the necessary supplies into that valley.

Measuring about 15 by 20 miles, the Homathko Snowfield lies at 7000 to 8000 feet south of the Waddington group, between the Homathko and Southgate rivers. Although the highest peaks about its periphery, such as Mount Queen Bess (10,700 feet), and Mount Grenville (10,200 feet), have been climbed, the snowfield itself is difficult of access and has been penetrated only a very short distance on one or two occasions. Its undulating arctic-like surface is studded with nunataks and peaks, rising from a few feet to 2000 feet above it. From the basin-like snowfield numerous glaciers radiate between these outer peaks and fall into the great valleys surrounding it. After ascending to the snowfield by one of these glaciers, we established camp two miles in from its edge. After climbing a nunatak here, we continued across the snowfield and with one intermediate camp reached the large icefalls of Jewakwa Glacier on the western side, thus accomplishing the first crossing of the snowfield. We placed a cairn on a nearby nunatak and returned to the eastern edge by a more southerly route. Just inside the eastern rim we climbed a jagged peak of 9500 feet, which we called Cambridge Peak. The route lay along a ridge barred by many gen-

darmes. The passage of the largest of these, ably led by Morrison, involved the ascent of a chimney, followed by a climb partly within a vertical crack in a huge smooth monolith and a final exposed traverse across the face to regain the ridge. Shortly after this we had to leave the snowfield in bad weather without attempting more of the attractive peaks about us. Our time had been shortened by initial delays and Morrison and Rucklidge needed several days for scientific work. By completing a survey and measurements on a small cirque glacier, they hoped to supply evidence in support of the theory of Professor W. V. Lewis, of Cambridge University, concerning the movement of cirque glaciers by "rotational slipping." During this time Beatty and I explored another valley joining Nine Mile Valley from the north. There we accomplished the ascent of our second virgin summit, a mountain of about 10,000 feet which we named Mount Dartmouth. Although technically easier than the previous peak, it was a rather long climb and entailed some interesting pitches, including a snow saddle inclining to 60° and a summit pyramid of steep and rotten rock with some exposure over an impressive north face. Soon after this climb time ran out and we returned up the lake on August 29.

GEORGE V. B. COCHRAN, M.D.

Northern Selkirks. The Harvard Mountaineering Club 1957 Camp was held during the first three weeks of August in the Edfalls, Adamant, and Sir Sandford groups in the northern Selkirks. Access was by way of Swan Creek. With the assistance of airdrops on Gothics Névé and Sir Sandford Glacier, we spent two weeks at the usual Fairy Meadow campsite and one week in the upper Palmer Creek valley within striking distance of Mount Sir Sandford (11,580 feet). Collectively the 19 members made 39 ascents of 25 different peaks in the area, despite generally unsettled weather which eliminated all climbs of technical rock work over 9500 feet. Included were the first ascent of an unnamed 10,250-foot snow peak between Sir Sandford and Palmer by John Noxon, Gordon Benner, and John Humphreys; the ascent of Sir Sandford by the Michael route by 13 men; and the first ascent of the north ridge of Mount Sentinel by Hugh Tanton and Marco Einaudi. The last, a long, pinnacled ridge cut by two large notches, which involved rappels and several pitches of class-5 rock climbing, took ten hours to complete from Fairy Meadow. (The easy route takes three). A strong attempt on the unclimbed east ridge of Sir Sandford was turned back by treacherous snow on crumbling rock at about 10,500 feet, exactly where another H.M.C. party had retreated four years previously.

JOHN S. HUMPHREYS

Clachnacudainn Range, Mount Revelstoke National Park, British Columbia. Around and near the Clachnacudainn Snowfield the small granite peaks of the Clachnacudainn Range rise to an altitude of more than 8600 feet. Although outlying peaks had been climbed previously, the principal summits around the snowfield had not been attempted until our party, Arthur and Claudia Maki and Robert and Peggy West, visited the area in August 1957. In addition, as a member of the "support party" in Base Camp, we had David West, age seven months.

From Base Camp at Eva Lake, 4½ miles by trail from the top of Mount Revelstoke, we worked out a route of approach to the Clachnacudainn Snowfield, crossing three high passes on the way. Using this approach we then made the first ascent of Mount Coursier (8690 feet), highest summit of the range. On the same day we climbed the 8660-foot peak immediately to the southeast, the first and highest peak of a long north-south ridge of rock towers which rise just east of Clachnacudainn Creek, and which form the headwall of the snowfield.

The two other principal summits of the group are 8600-foot peaks which guard the snowfield to the north and east. We reached the summit of the east peak, after crossing the Clachnacudainn Snowfield, in eight hours from Eva Lake. On another day we climbed the north peak via the long west ridge, which provided the best rock climbing of the trip. Ascents of "Clachnacudainn West" (7948 feet) and other minor summits west of Clachnacudainn Creek were also made. ROBERT WEST

Fatal Accident on Mount Howson. Major R. C. Gibson, M.C., President of the Alpine Club of Canada, died on August 20 after a fall on Mount Howson, highest peak of the Howson Range, in western British Columbia. In the death of Rex the mountains claimed one singularly devoted to climbing.

A party of five—Rex, A. C. Fabergé (Alex), Donald Hubbard, Alvin Peterson (Pete), and I—reached the Howson Range by float plane from Terrace, B.C. The region had been successfully explored during the climbing seasons of 1954, 1955, and 1956 by Alex, Rex, and other companions despite extremely rainy weather. (See: "Explorations in the Howson Range," by A. C. Fabergé, *Canadian Alpine Journal,* 1957.) With this background we could hope for success even though only eleven days were available for the trip. Camp was established in the rain near Sandpiper Lake at the eastern base of Mount Howson (ca. 9000 feet). The rain continued for a week, with snow above 7000 feet. A slight break in the weather on August 15 encouraged us to cross the col south of the mountain

in order to look at the west ridge as a possible route to the summit. From a vantage point on the flat southwest glacier, the ridge below the cloud line at about 8000 feet appeared to offer an inviting rock climb. August 16 was a perfect day, which four of us used in an approach to the north col. The base of the col (ca. 7800 feet) was reached by 10 A.M., but the deep and unstable snow on the short slope to the crest was too dangerous for climbing. With continued fair weather, Rex, Don, and I decided to establish a bivouac and attempt the west ridge while Alex and Pete explored several interesting peaks to the south.

We set out from our bivouac at 6 A.M. August 18 and by 11 A.M. had reached an elevation of about 7000 feet in a snow-filled couloir on the face of the west ridge. We started by climbing on the ridge but had entered the couloir to round a possible cul-de-sac. Rex had just taken the lead, with Don second on a 120-foot rope. He had advanced about 50 feet in the couloir and was cutting small steps in the hard snow when I saw him half turn. He stepped down and without braking effort slid into Don, who was changing stance. The two slid past me into an avalanche chute. They were almost stopped by my braking effort on an ice axe belay, but I was finally pulled from my stance. We fell for more than 200 feet in the steep couloir. The fall ended by our breaking through a crust that had been undercut by a water seepage. Don was free and could move enough to dig Rex and me from the snow and slide us across to a small ledge in the couloir. Rex had a serious head injury and was only semi-conscious. Don's right leg was swelling badly. I had broken my left arm and several other bones, but my legs were uninjured. Don and I decided that he would stay with Rex while I attempted to return to Base Camp. Extra clothing and food were adequate to protect Don and Rex from exposure.

I reached Base Camp about 4 P.M. August 19. Alex and Pete set out soon afterwards with sleeping bags, camping equipment, and medicines. They reached Rex and Don on August 20 about two hours after Rex had died, probably from a skull fracture. After a silent service, they covered Rex's body and left it tied to pitons. They then started down with Don by roping off towards the southwest glacier. Lower down a crutch was fashioned from tent poles. They reached the Sandpiper camp on the 21st. The party was met by a plane at Burnie Lake, several hours from Base Camp on the 22nd and returned to Terrace. Alex and Pete informed the authorities and those most concerned. A group of climbers quickly volunteered to bury Rex but were prevented by difficulties of arrangements and the turning of the weather into continued storm.

Rex and I had climbed together on many occasions over a period of 27 years, while Don and I were constant climbing companions. We had been in many situations of far greater potential hazard than the one on Mount Howson. Our undoing came at a place of little danger according to our standards. But perhaps the greatest hazard is on steep hard snow.

STERLING B. HENDRICKS

SOUTH AMERICA

Argentina

Ojos del Salado: Omission from the 1957 AAJ Article. Inadvertently credit lines and complete captions were omitted from the pictures opposite page 83 in Volume X, Number 2 of the *American Alpine Journal*, 1957. The upper picture was taken by Juan Simken on February 6, 1956 from the subsidiary summit which lies to the west and about 540 feet lower than the main peak. The highest summit, the black tower on the right of the picture, was climbed by other members of the Chilean expedition the day before. The Polish cairn lies on the ten-foot lower peak seen on the right of the rock tower.

The lower picture is a telephoto of the Ojos del Salado taken by Wilfred Cöppens from the high summit six or eight miles south on January 22, 1955 during the expedition of the Asociación Tucumana de Andinismo. The highest point, the rock tower on the left, has about ten feet more altitude than the summit to the right of it and across the gap, on which the Polish cairn stands.

The map on page 94 was provided by the American Geographical Society.

Cerro Don Bosco, Patagonia. An eight-man expedition of the Centro Andino Buenos Aires spent 32 days at the northern end of the central range of the Patagonian Icecap, northeast of where Tilman was in 1956. They discovered two high peaks on the Chilean side of the frontier for one of which they are proposing the name of Cerro Art Gilkey. After reaching the northern tip of Lago Argentino by boat, they reconnoitered several possibilities, but finally followed for 20 miles north the trough on the eastern side of the Glaciar Upsala, which they crossed to establish Camp IV at the junction of the Glaciares Upsala and Don Bosco. On February 3, 1957 Eduardo Klenk, Andrés Pastewski, and the leader, Jorge Peterek, managed to climb the difficult ice and rock east ridge of the Cerro Don Bosco and reach two of its summits. They had to return the next day to complete the ascent of the highest point (c. 8500 feet).

Central Argentina. Members of the Club Andinista Mendoza made the following first ascents: in the Cordón de las Delicias, the Cerro San Jorge (17,257 feet), January 27, 1957 by Daniel Bari, Ricardo Ciancio, Leopoldo Fanelli, Carlos Ferrero, Fabio Mohovich, and Hugo Santi, and the Cerro CAM (16,733 feet) by Santi alone; in the Tres Mogotes group above the Río de las Carreras, the Cerro Marucho (18,012 feet), January 23, and the Punta Chiquita (18,045 feet), February 4, both by Mauro Bodo; in the Quebrada Matienzo region, the Pico San Antonio (16,733 feet), January 21, by Teófilo Funes, Jorge Luis Pallucchini, and Ulises Vitale, the Pico Río de Janeiro (17,061 feet), January 24, by Helena Roemer Campello, Funes, Pallucchini, and Vitale, the Cerro Brasil (17,389 feet), January 28, by Laercio Martino, Otelio Cantero, Antonio Marcos de Oliveira, Gilberto de Oliveira, Mario de Araujo, Funes, Pallucchini, and Funes, and the Cerro Pasteur (18,045 feet), January 28, by Raúl Rodríquez.

Bolivia

Cordillera Apolobamba. To the east of Lake Titicaca not far from Ulla Ulla, Werner Karl, Hans Wimmer, and Hans Richter, of the Berchtesgaden section of the Deutscher Alpenverein, explored and climbed for five weeks in the little-known Cordillera Apolobamba. Their base camp lay north of the Pelechuca Pass, east of the Pupuya group and south of Chaupi Orco. They climbed all the main summits except Palomani. Their ascents included the following: Punta Lisa (17,717 feet), traverse by Karl alone on July 12; Cerro Mita (18,045 feet), traverse on July 13; Cerro Ishkacuchu (18,537 feet), traverse on July 13; Huelacalloc (19,082 feet), north ridge on July 18; Cerro Posnansky (17,979 feet), north ridge by Wimmer and Richter on July 21; Cololo (19,406 feet), south face, east ridge, north face, west ridge, and south face on July 23; Chaupi Orco (19,830 feet), a 17 hour climb from the northeast on August 1; Cerro Nubi (18,734 feet), traverse on August 6; Huanacuni (19,023 feet), west ridge on August 6. They later made the ascent on the same day of three 19,000-foot peaks in the Cordillera Real near Illimani.

Cordillera Real. The Chileans, Ociel González, Heinz Koch, Alvaro Ramos, and Hernán Cruz, made the second ascent of Ayllaico (17,390 feet) and the fourth ascent of Pico Negro (18,370 feet).

Chile

Central Chile. The most important recent ascent in the central Chilean Cordillera was that of Juncal Chico (18,767 feet), which for some time

has been the highest yet-unclimbed peak. After establishing camps at 14,000 and 17,000 feet, on January 10, 1957 at 5:45 P.M. the Chilean, Manuel Bazán, and the Czech, Radko Schneberger, reached the top. They had had difficult climbing up rock and steep snow to a col which gave access to the summit. The Italian, Aldo Cassasa, had to give up because of the altitude.

Somewhat farther south, above the Mamá valley east of Rancagua, a Chilean group made several rather difficult first ascents. On January 24 Bión González, Patricio Campos, Leonardo Alvarez, and Alvaro Yañez climbed the Cerro Gabriela Mistral (14,928 feet). On January 26 Eduardo García and Francisco Vivanco climbed the Matterhorn-shaped Alto de la Mamá (15,595 feet), a difficult climb, on which they used 30 pitons. The next day González, Roberto Schnell, Ernesto Lavanchy, and Hernán Molina ascended the Corona de Don Manuel (14,600 feet).

An expedition of the Asociación Santiago de Andinismo y Excursionismo failed, as have all other groups, to climb the last 100 feet of Chimbote (17,815 feet). They did climb on March 11, 1957 Polleras (19,510 feet), which had been ascended before, and made the second ascent of Polleritas, or Académico (17,618 feet). This group consisted of Bión González, Jorge Duprat, Roberto Fuentes, Juan Tangol, Oscar Zorrila, Eberhard Meier, and Guillermo Silva.

In July Kurt Claussen led the first winter ascent of the Plomo (17,815 feet).

Cerro Balmaceda and Cerro Paine, Patagonia. An Argentine expedition of the Club Andino Bariloche had expected to attempt the main peak of the Paine group, which they had attempted in 1954 and 1955. Just before leaving for Punta Arenas in mid October 1957 they were surprised to be informed by Chilean officials that these soaring, ice-fluted granite Paine spires, which rise to altitudes between 9000 and 10,000 feet from near sea level, were being reserved for an Italian expedition sponsored by the Padre Alberto de Agostini. Political permission has never been necessary in Chile. The Chileans assigned them Lieutenant Ramírez and Corporal Saavedra and gave them permission to attempt Cerro Balmaceda (6677 feet), some 30 miles south. The Balmaceda group is composed of three parallel ridges that run north and south. The westernmost caused them little difficulty, but the second was definitely of Alpine character, despite its height of only 5500 feet. In frightfully bad weather, typical of the region, they reached a pass which gave access to the third ridge, which is crowned by the highest peaks. On October 25

a momentary break in the clouds gave them a view of a glacier which promised a route up the northwest side to the summit. When, after nearly three weeks of incessantly bad weather, the weather suddenly improved, on November 8, they left their snow-cave camp on the pass, although the summits still lay hidden in the clouds. Otto Meiling, Ivan Arnšek, Carlos Bottazzi, and the Chilean, Saavedra, reached the top at 2:45 P.M. just as the clouds cleared from the peaks.

Meanwhile a small party was reconnoitering the Paine group. After a week of bad weather, on October 26 they reached a glacial cirque where from 5500 feet a couloir ascends the rock walls to the "techo" or roof, a high glacial basin around the outer edge of which rise the principal summit pyramids. After ascending the 60°-couloir several times to be driven back by the weather, on November 8 Augusto Vallmitjana and his son Augusto, Carlos Sonntag, and Davorin Jereb ascended to the "techo." The first two made the second ascent of Paine South (Cumbre Bariloche), first climbed by the Chileans in 1955. The latter two attacked the south-east face of the main peak (10,007 feet). Difficult ice-climbing above a 6000-foot cliff brought them finally to the foot of the rocks. This pair returned two days later to ascend the route they had prepared in the ice, to climb the severe rock face, and to reach a snow gulley about 100 feet below the summit ridge. Although there seemed to be no further difficulties, they turned back from there in deteriorating weather. Other members of the party were Vojslav Arko, José Iglesias, and Benjamin Dixon.

Paine Group, Patagonia. An Italian expedition, sponsored by Padre Alberto de Agostini and led by Dr. Guido Monzino, made several first ascents of severe difficulty in the Paine group. Although plagued by the bad weather typical of the region, on December 27, 1957 after 27 days in the field Jean Bich, Leonardo Carrel, Camillo Pelissier, Toni Gobi and Pierino Pession reached the summit of the highest peak of the Paine group (10,007 feet). The Italians believed that the Argentines, Sonntag and Jereb (see above), had turned back considerably below 100 feet from the summit and stated that there were severe climbing difficulties above the Argentine high point. The Italians climbed 6½-hours beyond the point where they found the last Argentine pitons. On January 17, 1958 Jean Bich, Pierino Pession, Camillo Pelissier, and Leonardo Carrel, supported by Toni Gobbi and Gino Barmasse, made the difficult first ascent of the incredibly sheer spire of the Torre Norte del Paine (North Paine Tower) (about 8500 feet). The first 250 feet of the south ridge, which took them

four hours, were of extraordinary difficulty, being perpendicular, nearly without holds and with hardly a crack in the rock.

Cerro Arenales, Patagonia. An expedition, jointly sponsored by the Japanese Alpine Club and the Chilean Federación de Andinismo, made the first ascent of the Cerro Arenales (11,310 feet), which lies in the Cochrane Range above the northern part of the Continental Icecap (Hielo Continental). Under the joint leadership of the Chilean Germán Mills and the Japanese Tanaka, the group set out in late January from the Río Baker. Difficult river crossings, rough terrain, and bad weather complicated the approach march to base camp on the Lago Colonia. Finally on March 6, 1958 the Japanese Takagi and Emanji and the Chilean Kurt Klaussen reached the summit. Two days later the Chileans Germán Mills and Captain Carlos Piderit and the Japanese Morita repeated the ascent.

Colombia

Sierra Nevada de Santa Marta. In January 1957, at the same time that the English expedition under A. E. Cunningham was in the western end of this range (See *AAJ* 1957, pp. 161-163), our group, made up of Piero Ghiglione and Silvio Morra, Italians, and Evelio Echevarría, Chilean, and the local porter, Jesús Zapata, of San Sebastián, penetrated into the region from the south along the route used by the Cabot party in 1939. We established Base Camp at 14,200 feet, southwest of El Guardián. From there we ascended on January 6, 1957 to the summit ridge of Pico Tairona (about 16,000 feet), but a gendarme in the rocky knife edge prevented our reaching the top, which remained about 100 feet above us. On January 8 I made the first ascent alone of an easy 15,000-foot rock peak west of the Sevo Simeina valley and south of Tairona. In the middle of January we moved our camp to a high cirque at 16,000 feet on the southern slopes of Pico Colón, the highest of the Colombian Andes. (Pico Bolívar is given the identical altitude. —*Editor*) While Morra and I were packing loads, which included heavy movie equipment, Ghiglione made the third recognized ascent of Pico Colón (18,947 feet) by the Bakewell-Wood route of 1939. Lack of time forced my return to San Sebastián. With the native porter, Jesús Zapata, an exceptionally strong climber, Ghiglione made ascents of El Guardián (17,338 feet) from the southeast on January 15 and Pico Ojeda (18,012 feet) on January 20 by the south ridge. Neither was a first ascent.

The Sierra Nevada de Santa Marta still presents a wide field for action. The Cunningham party showed that the best route of approach is doubt-

less offered by the Donachuí valley with Valledupar as the point of departure. The Donachuí valley divides into two upper valleys, the Donachuí itself and the Guatapuri. On the northern side of the latter rise various peaks that range from 17,000 to 17,600 feet, all unclimbed. There are also other virgin peaks of the same height to the west of Pico Colón, in the extreme western end of the group, which do not appear on maps and have been located only by airplane.

EVELIO ECHEVARRIA C., *Federación de Andinismo de Chile*

Sierra Nevada de Cocuy. The Chilean Evelio Echevarría describes this little known region as a handsome glacial chain, located about 300 miles northeast of Bogatá, easy of access by road. When he visited the range in December 1956 he was plagued by typical bad weather, which prevented his climbing higher than 16,200 feet on the 17,360-foot Nevado de Chiflón. A Cambridge University group operated there from July to September 1957, making biological studies and climbing. They made the following climbs: second ascent of San Pablín (17,680 feet), July 30, by B. A. Curry and R. Perry; fourth and fifth ascents of Alto Ritacuba (18,020 feet), August 5, by Curry, Perry, and J. Moore, and August 7, by P. Grubb and I. Allnut; first ascents of Peak 17,460, September 4, by Moore and Perry, of Peak 17,320, September 6, by Curry, Perry, and Moore, and of Peak 17,112, September 7, by the same.

Ecuador

Cotopaxi and Chimborazo. Raymond Lambert and his wife Annette climbed Cotopaxi (19,848 feet) on March 9, 1957 and Chimborazo (20,702 feet) on March 17. This was the first time that a woman had ever climbed either of these peaks.

Peru

Jirishhanca and Yerupajá Chico, Cordillera Huayhuash, and Ascents in the Cordillera Raura. The expedition of the Österreichischer Alpenverein accomplished two of the most difficult ascents yet made in the Andes. The Austrian group was led by Dr. Heinrich Klier and consisted of Siegfried Jungmair, Erich Krenmayr, Herbert Raditschnig, and Toni Egger. On the approach march the latter two made the first ascent of Kichas, one of the Nevados de Quichas (16,750 feet). From Base Camp on the Carhuakocha (lake), June 8, 1957, Krenmayr and Jungmair made the first ascent of the Nevado Alcay (17,323 feet) from the Cerro Alcay (17,192 feet), which Egger and Raditschnig had already climbed by its

slabby east face. On June 9 all the climbers made the second ascent of Jirishhanca Chico (17,936 feet), climbed in 1954 by Mariner and Aeberli. The next day they turned their attention to Jirishhanca itself (20,100 feet), which they had previously reconnoitered. The northern glacier was not passable, but they ascended a rocky ridge along side it to an upper snowfield. Porters assisted them only to Camp II at the foot of the eastern cliffs of Jirishhanca. From there the Climbers were on their own and state that they found the difficulties greater than any they had ever encountered anywhere. They climbed perpendicular limestone to a huge overhanging cap of ice, through which they had to tunnel to reach the top of the first bastion. Thence they climbed three large patches of hanging ice to the base of a second bastion, which was much more difficult than the first. Notwithstanding bad weather, they had forced a route to the top of this second by June 29, but withdrew without attempting the powder-snow covered, corniced, 70° summit ridge, planning to return later when conditions might be more favorable.

Yerupajá Chico, or El Toro, as they called it (20,082 feet), was attacked by its northeast bastion and east ridge. Camp I was at the foot of the east face. It took them three days to work out a route up a 1650-foot limestone ridge, continually swept by rockfall, which led them to a hanging glacier at 18,400 feet. After a day's rest at Base Camp, Egger and Jungmair returned on June 4 to Camp I to find that Indians had stolen most of their food. They retraced their steps, nevertheless, to the hanging glacier camp. The next day they climbed the difficult rock and ice all day, barely escaping death when an ice avalanche swept close by them. They bivouacked at 19,350 feet in a small pulpit at the foot of the summit ridge. They followed the difficult ice ridge to the summit, which they reached at 10:30 A.M. July 7. Rather than retrace their steps, they rappelled down the south face and reached Base Camp on Carhua Lake at 7 P.M.

Meanwhile Krenmayr and Raditschnig failed at 18,700 feet on the Nevado Carnicero (19,620 feet) for lack of equipment.

All returned to Jirishhanca on July 10 and climbed to Camp II. The next day Egger and Jungmair climbed with 50-pound packs. The ice tunnel below the summit of the first bastion had to be recut. That afternoon, leaving their bivouac equipment, they prepared the third ice patch and fixed more ropes on the second bastion. On the morning of the 12th they reached their previous highest point at the top of the second bastion at 8 A.M. after only an hour of climbing. From there they had only six 160-leads to the summit, but the ridge was incredibly difficult. They

could not climb the ridge top but traversed under the cornices on the north face. They reached the top only by midafternoon in stormy weather. Their descent was entirely en rappel, but involved a bivouac at 19,000 feet in a snowstorm. They continued to rappel on 350-foot ropes to Camp II the next day. On July 15 Krenmayr and Raditschnig climbed Trapecito (18,500 feet).

The expedition, minus Klier, transferred its activities to the Cordillera Raura. On July 25 Egger and Krenmayr climbed Condorsenja (18,045 feet), while on the same day Raditschnig and Jungmair made the first ascents of six peaks between 17,000 and 17,400 feet in the Patron-Jaico group. They climbed Santa Rosa (18,500 feet), Cinco Caballeros (18,045 feet), and Yarupa (18,700 feet), before Raditschnig repeated, with the German Degerl Briegleb and the Peruvian Martín Fernández, the ascent of Condorsenja on July 31. The same day Krenmayr and Jungmair made the first ascent of the Torre de Cristal (17,700 feet).

Pirámide de Garcilaso and Alpamayo in the Cordillera Blanca, and Jutunhuma and Cayungate I in the Cordillera Vilcanota. An expedition of the Swabian Section of the Deutscher Alpenverein established its base camp on the eastern shore of Parrón Lake in the Cordillera Blanca. Their chief objective here, the Pirámide de Garcilaso (19,308 feet), had repelled the Germans in 1955 and the British in 1956. Nick Clinch's expedition had hoped to attempt it later in the summer. The Germans established Camp I at 15,750 feet and Camp II at 18,200 feet on the north ridge of the north peak. After surmounting a 50-foot ice step and then another shorter one, the leader, Günter Hauser, with Bernhard Kuhn and Horst Wiedmann, on May 23 reached the summit of Pirámide's north peak (18,537 feet), but the jagged snow ridge precluded any further advance towards the main peak. The following day they climbed a steep ice slope to a col between the peaks of the Nevados de Parrón. With the Peruvian porter, Emilio Angeles, they reached the summit of Parrón Chico (18,209 feet), only two rope-lengths above the col. The next day the Germans returned to the col and climbed Parrón Grande (18,537 feet). They returned to Pirámide, attacking the northwest face, in the middle of which they reached a terrace. Thence they climbed one of the 60° ice gulleys that leads to the top. After a bivouac just below the summit, they climbed the remaining two difficult rope-lengths on the morning of May 29. Their next ascent, June 20, was that of Alpamayo (20,079 feet), on which they were joined by the fourth member of the expedition, Frieder Knauss. The Peruvian César Morales Arnao points out that this

is the first ascent. The Franco-Belgian expedition of 1951 ascended from the north and were cut off from the highest point by séracs. The Germans climbed up the south ridge and reached the highest point.

Transferring their field of activity, the Germans moved to the Cordillera Vilcanota, where they found that some of their objectives coincided with those of the Harvard Andean Expedition. The Americans had already been turned back on Jatunhuma (19,994 feet) by a bulwark of ice, which the Germans ascended up a 150-foot crack in the ice. Hauser, Kuhn, and Wiedmann were joined by the American ambassador's son, Theodore Achilles, on their climb on July 27. From Camp III, 1000 feet below the top, Hauser and Kuhn climbed on July 30 Cayungate I (about 19,685 feet) up steep slopes covered with breakable crust. They climbed three peaks to which they gave names: Kakakiru (18,865 feet) by Wiedmann and Knauss, August 2; Caracol (18,700 feet) by Hauser, Kuhn, and Achilles, August 3; and Mariposa (19,125 feet) by Wiedmann and the Peruvian Eugenio Angeles. On August 15 Hauser, Kuhn, and Achilles climbed Yayamari (19,710 feet). The ascent by Knauss and Wiedmann of Campa I (17,717 feet) was a fourth. It had previously been climbed by Austrians, Peruvians, and the Harvard Andean Expedition.

Cordillera Vilcanota. A four-man German expedition, led by Günter Hauser, spent this summer climbing in the Cordilleras' Blanca and Vilcanota, of Peru. The results of their efforts were extremely rewarding, giving them a total of thirteen first ascents in as many attempts. Among these two stand out in particular, the Nevado Alpamayo and the Pirámide de Parron both in the Cordillera Blanca. The Franco-Belgian expedition of 1951 reached the south summit of the former under bad weather conditions and mistakenly assumed it to be the top. George Band's 1956 expedition made several attempts on the Pirámide but was unable to reach the summit.

I joined the expedition in Lima while preparations were being made for the Vilcanota following their ascents in the Cordillera Blanca. The area for which we were headed lies about 20 miles south of Cusco in southern Peru, and had been the object of only two previous expeditions. Our primary goal was Jatunhuma, a 20,100-foot peak that lay hidden well behind the initial fringe of the range. Three days with mules and horses got us from the town of Yanama to Base Camp at about 15,500 feet. As all my previous climbing had been in the Alps this was already higher than I had ever been before. We set up two subsequent camps as we followed the glacier to the foot of the peak. Our route initially followed

the northwestern ridge until a series of cornices forced us out onto the western face. The sixty-degree slope necessitated cutting a good many steps, but the snow was firm and we made good time. At about 19,500 feet we came to the overhanging ice wall that had stopped the Harvard Andean Expedition two weeks earlier. A delicate traverse under the wall led us into a fissure that we hoped would take us through the wall and onto the summit ridge beyond. Bernhard Kuhn, one of Germany's finest young climbers, did a beautiful job of leading this particularly difficult pitch. This was the only time during the expedition that pitons were placed. From there it was only a matter of minutes to the summit, and the wonderful feeling that every mountaineer knows on finding himself at the top.

We subsequently divided ourselves into two parties, with Wiedmann and Knauss returning to Base Camp to do two of the nearby nineteen-thousanders, while Hauser, Kuhn, and Achilles went on to try Cayangate I. Not being as well acclimatized as the others I stayed at Camp III (18,300 feet) while they went on to claim another summit. On returning to Base Camp we found that the first party had climbed Kakakiru (18,865 feet) and were well on their way up Mariposa (19,125 feet). In the interim the three of us climbed Caracol, which in spite of its formidable looks turned out to be a relatively straightforward climb. Our final objective took four days with mules and horses, skirting the Cordillera to the south, before being able to set up a new Base Camp. Once again Hauser, Kuhn, and I were on the same rope, while the other two went back to Yanama to handle the massive correspondence due to some seventy percent of their equipment and clothing having been donated for advertising purposes by various factories. This is one problem American expeditions do not seem to have. Meanwhile the three of us fought bad weather and poor snow conditions for the expedition's sixth first ascent, Yayamari (19,710 feet). Although not a technically difficult ascent it proved to be long and tiring. The high camp put us within seven climbing hours of the summit. The climb itself went without incident, but all three of us suffered from mild cases of snow blindness for two or three days following the descent.

The expedition had taken a little over five weeks; five wonderful weeks of climbing with four of the nicest possible companions to whom I will always feel deeply indebted.

T. C. ACHILLES, JR.

San Juan, Cordillera Blanca. On June 4 Thomas McCormack and Rodman L. Tidrick arrived in Lima nine days ahead of Nick Clinch and

Virgil Day to buy all the food and part of the equipment to avoid shipping costs and Peruvian customs difficulties. Shortly after our arrival, news reached us that a German expedition had made the first ascent of the Pirámide de Garcilaso, our original objective. Further disrupting our plans, the porters for whom we had made arrangements several months ahead were being used by the Germans and would not be released until the end of June. As a new objective we picked unclimbed San Juan (19,170 feet), only 1½ days march from Huaraz. Upon our arrival in Huaraz, we were fortunate in acquiring as porters two very fine men, Augusto Jamanca Rosales and Eustaquio Henostroza Vargas, who had portered for three previous expeditions.

On June 16, with 22 days of food and equipment loaded on eight burros, we left Huaraz and headed up the Quebrada Quilcayhuanca and branched off into the Quebrada Cayesh, where Base Camp was established at 14,000 feet, June 17. Next day, Nick and I pitched Camp I at 16,000 feet, just off the glacier, and on June 19 scouted out a route to the pass and looked at the not too promising icefall that blocked our way to the south ridge of San Juan. The north ridge immediately above Camp I offered no possibility of a route to the summit. Though bad weather hampered our reconnaissance, we spent until June 23 unsuccessfully trying to push through the crevasses and unfavorable snow of the icefall. On that afternoon we climbed onto the rocky north ridge of San Juan and viewed for the first time the possibility of a route to the summit via the northwest face. On June 26 we left camp at the crack of dawn to try this route, but had to turn back by 11:30. After more unsuccessful reconnaissance in the icefall, we turned our attention to the northeast ridge. Carrying one tent and three days rations, we packed over the northwest ridge, dropped into a small hanging valley at the foot of the northwest face, and followed a rock buttress to a snow slope which gave access to the northeast ridge. One June 30 we established camp at 17,000 feet, where the rock buttress joined the snow. At dawn next morning we set out, reaching the crest of the northeast ridge without undue difficulty. We started to traverse along the ridge, but high angle ice climbing with inadequate belays, a dangerous cornice and worsening snow conditions forced us to turn back at noon. Nick had only two days left, so we returned the entire distance back to Camp I on July 2 to make a desperate try for the summit by the icefall route and the south ridge. The following day we left camp at 5 A.M., an hour before daylight, in the hope of getting through the icefall before the sun made the crevassed ice too dangerous. By 8:30 we had found a way and were at the base

of the south ridge at 10:30. Since it was obvious that a bivouac would be necessary, Virg turned back with Tom, who was sick. At noon we had to wait for 15 minutes to allow the mist to clear and let us see the final obstacles, a huge mushroom with a double-corniced ridge and the final summit ridge itself. The snow on a southern ridge does not have the full benefit of the sun and is therefore unconsolidated. After spending three hours on steep, soft-snow slopes and on a delicate ice traverse on the eastern side of the mushroom, we reached the summit in thigh-deep snow at 4:30 P.M. Spending just enough time to take pictures, we retreated to a crevasse several hundred feet below the summit to wait out the long night. Suffering no ill effects other than fatigue, hunger, and thirst, we climbed out of the crevasse into the cold northwesterly wind at 7 A.M., returned to Camp I, and with the others descended to Base Camp by 6 P.M. The next day Nick left for Huaraz en route to the United States since his leave from the Air Force was over.

In the Quebrada Ishinca the rest us would have access to unclimbed Ocshapalca (19,925 feet), and to Ranrapalca (20,217 feet) and Tocllaraju (19,780 feet), both climbed by the Austrians in 1939, and to several peaks of about 18,000 feet. On June 9 Tom, Virg, and I left Huaraz with 17 days of food and the next noon established Base Camp at 16,000 feet. By the 13th we had placed our camp for Ranrapalca at the foot of its northeast face, at 17,000 feet. On the 14th, accompanied by Alberto Morales Arnao, we were turned back from the mountain at 18,000 feet by a 200-foot icefall. After a quick look at Ocshapalca from camp at 17,000 feet, near the base of its difficult northwest ridge, the only possible route, we gave up the idea of trying it because of lack of time and returned to Ranrapalca. At 5 A.M. on July 17 we set out and found a route through the icefall. The ice face leading to the summit ridge was about 1500 feet high, 45° on the lower portion and increasing possibly up to 60° at the top. At 1:30 P.M. we turned back only 300 feet from the summit ridge and about 500 feet below the summit. The next day Tom, Virg, and the porters climbed two unnamed peaks of about 18,000 feet while I broke camp. We all returned to Base Camp. On July 19 Virg left for Panamá, as his Army leave ended. Tom and I, with the porters, established Base Camp for Tocllaraju at 14,000 feet, and the next day a high camp at 17,000 feet. On the 22nd we were turned back 600 feet from the summit of Tocllaraju by a crevasse that extended the whole length of the northwest face.

After returning to Huaraz on the 26th we tried Huascarán (22,206 feet), the highest mountain in Peru. A group of Peruvian climbers had

failed on July 23 because of crevasses and deep snow. On July 31 we preceded to the mountain a second group of Peruvians who had invited us to join them, but who could not leave as soon as we could. On August 6 we were turned back at 19,000 feet just below the *garganta* by deep powder-snow. We could also see that a crevasse between the north and south peaks blocked the route to the *garganta.* The next day we returned with the Peruvians to take one last look at the *garganta* and to confirm our reports of the day before.

RODMAN L. TIDRICK

Pucahirca Central and Pucaranra, Cordillera Blanca. The Franco-Swiss Expedition to the Andes 1957—Mlle. Françoise Birkigt, Mlle. Renée Colliard, Mme. Annette Lambert and M. Raymond Lambert, of Geneva; Mme. Claude Kogan, of Nice; Jean Lamy, of Lyon; Dr. Félix Magnin, of Hauteville; Roger Merle, of Cannes; Víctor Moreno, of Quito, Ecuador; and Mlle. Claudine van der Straten, of Belgium—had for its objective South America, especially Ecuador and Peru. This expedition, in the field for six months, was in two parts, the first of which took it to Ecuador. (See above.)

The second phase of our expedition began at Huaraz on the Río Santa, at the foot of the Cordillera Blanca, where our mountain team assembled. Our first objective was Pucahirca Central (*ca.* 20,000 feet). (The north peak was climbed by the Austrian Erwin Schneider, in 1936, and the south peak by the Americans Clinch, Kauffman, McMannis, and Sowles, in 1955.—*Editor.*) We reached Caras at 7235 feet by truck with all our equipment. Leaving Caras and ascending the Quebrada Santa Cruz, in two days we reached the foot of the Punta Unión pass, where at 13,500 feet we established Base Camp. We reconnoitered from there to find a route up the glacier and reach the col between the Pucahirca group and Taulliraju. After four days we reached this col, where we established Camp I. From there we crossed the immense snowfield south of Pucahirca to establish Camp II at 17,700 feet on the south face directly below the summit. Expecting to reach the east ridge easily, we attacked the south face directly, but after several days of attempts we gave this route up because of bad snow conditions and slow progress. A rocky spur that ran to the southeast gave access to the west ridge. After having climbed 2300 feet of badly pitched rock, and after a bivouac, we set foot on the west ridge, which at first seemed very easy. Unfortunately 150 feet from the summit we were cut off by a huge crevasse from the enormous block of ice that forms the highest point of the mountain.

Pucahirca Central consists of huge séracs, like hanging glaciers placed on the summit. Two weeks earlier we should have been able to pass easily on a snow bridge that formed a link between the west ridge and the summit block.

From Huaraz we reconnoitered Cayesh (18,770 feet), a rocky summit at the end of the Quebrada Quilcayhuanca. During the reconnaissance we climbed an 18,375-foot peak from which we could see that Cayesh could be ascended from the Quebrada Rurec on the eastern slope of the Cordillera Blanca. Since this approach-march would be rather difficult and would necessitate rock climbing with complicated artificial aid, we returned, not having sufficient means for it at our disposal.

We descended the valley a little from Cayesh and established a new Base Camp at 13,125 feet, in the Quebrada Quilcayhuanca, to attempt Pucaranra (20,167 feet). From there we placed Camp I on the edge of a glacial lake, at 15,150 feet, at the foot of Pucaranra's west face. By means of a glacier that dominates the lake, we climbed to a snowy saddle on the east ridge, where we set up Camp II at 17,700 feet. On August 18 we followed the east ridge to the summit. The summit party consisted of Mme. Lambert, Mme. Kogan, Mlle. Van der Straten, and Moreno and Lambert. This was the second ascent and the first feminine ascent. (The Swiss—Lauterberg, Marmillod, Schmid, and Sigrist—made the first ascent in 1948.—*Editor.*)

RAYMOND LAMBERT, *Swiss Alpine Club*

Attempts on the Nevado Rurec and Uruashraju, Cordillera Blanca. At Huaraz, our group, consisting of Jac Lasner, Fred Martin, and Bill Dixon, from California, and John Dixon, from Wisconsin, were joined by two native porters, Macario Angeles and Augusto Jamanca. These two men, experienced on snow and ice, have spent five seasons working for climbing parties. We owe a great deal to our porters, to President José Patiño Camones, and to César Morales Arnao, of the Club Andinista Cordillera Blanca, and to our interpreter, Juan Ramírez, who all did much to help. From August 3 to August 23 we occupied Base Camp in a 14,000-foot meadow on a moraine shelf overlooking the lake at the head of the Quebrada Rurec. As the maps show two valleys of this name, it is necessary to specify that we were in the Quebrada Rurec whose source is on the western side of the crest of the Cordillera Blanca, about three miles south of the Nevado Huantsán. This valley is ringed by four peaks of altitudes of 18,700 to 18,800 feet. To the west is Huantsán Chico; to the northwest lies Cashan; to the northeast is the Nevado Rurec, pro-

jecting from the south ridge of Huantsán; to the southeast is Uruashraju. Cashan was climbed by the Swiss in 1948, but the three others are unclimbed.

From Base Camp, August 5, Lasner and I climbed a rock spur (16,800 feet) on the ridge running southeast from Cashan. From a camp at 16,300 feet, south of the Nevado Rurec (18,700 feet), we attained the south ridge of that peak by its west slope, but the difficulty of the upper portions of this ridge discouraged further attempts. From this camp we climbed on August 10 a 17,500-foot snow peak on the main divide one mile north of Uruashraju. The second attempt on the Nevado Rurec was made from a camp at 16,100 feet on the glacier west of the peak. The route lay on a sloping, glacier-covered ramp, some 100 to 300 yards wide, which climbs past the right (south) side of a very prominent rock-snow pyramid ½ mile northwest of the Nevado Rurec. The ramp, at its upper end, leads gradually into the almost level northwest ridge leading to the summit. We had ascended its steepest portion, when, at a constricted part at 17,200 feet, our path was blocked by a ten-foot crevasse running the entire width of the glacier. The upper part of this route appeared quite feasible, and perhaps earlier in the season, when there might be more snow bridges, a party would meet with success. We also feel that an approach to the Nevado Rurec from the north-northwest via the Quebrada Rajucolta might encounter fewer difficulties than by our route.

My brother John and I attempted Uruashraju (18,815 feet) on August 18, leaving from a "minimum" camp at 15,500 feet on a talus slope south of the lake. The route lay chiefly on talus and rock ledges, with no rope required until we emerged on the snow- and ice-covered west ridge at about 17,500 feet. There was a little ice climbing as we started up this easy ridge. For the last 200 feet we cut steps up steep hard ice. We thus attained the southwest summit ridge, but turning to the left toward the summit, were dismayed to encounter very soft snow at 18,700 feet. Though only 100 feet below the summit and 100 to 200 yards away, we found very steep cornices, made very treacherous by the soft snow. It was now 3 P.M. and we had only three more hours of daylight. A storm was coming in quickly from the southeast. It all added up to retreat and, thankful for the steps we had cut, we descended quickly but safely in the storm. We doubtless had used the right route, but we should have camped at perhaps 17,000 feet. On August 20 I climbed a 16,700-foot rock peak 1½ miles east of Cashan, and Martin and

Macario Angeles a 17,400-foot peak with an ice summit on the Cashan-Rurec ridge about a mile east of Cashan.

WILLIAM J. DIXON, *Sierra Club*

Peruvian Expeditions. César Morales Arnao reports an active year by Peruvian climbers. Among other climbs he reports the first ascent of Rajunta (17,586 feet), which is not far from Lima, May 28, by Alberto Morales Arnao, Segundo Villanueva, Juvenal Acosta, Humberto Varillas, Carlos Maguiña, and Miguel Sotomayor Castro, of the Club Andinista Cordillera Blanca de Huaraz.

British Geological Expedition. Charles P. Booth and A. J. Ravenscroft made geological and glaciological studies from the end of May to mid-September in the southern Peruvian Andes. They explored the Cusipata, Tantamco, Ausangate, Nudo Huaynacapac, Chichicapac, and Allincapac regions, from Macusani, and returned to Sicuani through the Aricona and Quenemari groups. They ended their work in the glaciers of the Apurimac valley.

Pumasillo, Cordillera Vilcabamba. The Cambridge (England) Andean Expedition, under the leadership of John H. Longland and Simon G. McH. Clark, was in the Cordillera Vilcabamba from mid-June to mid-August. Knowing from the British and American parties of 1956 that approaches to Pumasillo (about 20,200 feet) from the west and from the east were pretty hopeless, we tried to come at the peak from the north and to work out a muleable route to its base. After three weeks we found that the northern approach was no good, but that we could enter the Pumasillo basin from the south through a gorge that had discouraged previous parties. On July 13, 1957 we set up Base Camp at 14,750 feet in the basin at the foot of the west ridge, probably the only safe route with current techniques. Advanced Base was below the West Buttress at 16,250 feet, Camp I at the top of the west glacier icefall at 18,000 feet, and Camp II above the west ridge ice-buttress at 18,700 feet. The icefall was difficult and complex but seemed generally stable; *most* of it is safe from the threat of avalanches from higher up. The ice buttress was very difficult, being steep and requiring artificial aid for an overhanging section with dangerous vertical unconsolidated snow above. We had the whole 700 feet protected with fixed ropes, many pitons, stirrups, and three-foot aluminum stakes; this was the crux of the climb. From there to 500 feet below the summit, the west ridge

was straightforward, steep ridge-work. We were then forced onto the south face, where the snow is always bad in the Andes, climbed a hard 60-foot ice wall and joined the summit ridge about 400 feet from the top. The ridge was heavily corniced and very complicated by towers as well. Before the summit we abseiled into a 40-foot gap, made the top, and then had to climb laboriously back up the rope. It is just as well that the ice buttress and final ridge were not any harder, but it was an enjoyable and difficult peak and well worth getting the whole party to the top. On July 23, Mike Gravina and Clark reached the highest point. On the 25th Harry Carslake and I climbed to the summit, followed the next day by Kim Meldrum, Colin Darbyshire, and Ronnie Wathen. We also climbed three 5000-meter peaks (above 16,400 feet) north and west of Pumasillo and mapped some of the west side of the range.

JOHN H. LONGLAND, *Cambridge University Mountaineering Club*

HIMALAYA

India

Nanda Devi. An eleven-man Indian expedition, organized by the Himalayan Mountaineering Institute and under the leadership of Major Narendra D. Jayal, failed to climb Nanda Devi in July, 1957. They followed the route of the British-American Himalayan Expedition, which made the first ascent of the 25,645-foot peak in 1936. The Indians, including three Sherpa instructors—Da Namgyal, Ang Temba, and Nawang Gompu—reached Camp IV at 23,500 feet, where they were stormbound for three days and had to retreat. In 1951 a French expedition lost Duplat and Vigne on an unsuccessful attempt on the peak.

Parbati Valley. Snow lay so deep last spring that the Yorkshire Himalayan Expedition on April 26 established its base camp only at Pulga. Thence they attempted to penetrate the upper Parbati, Tos, and Tichu valleys, but deep snow and bad weather thwarted them. They finally ascended the Parbati to the Dibibokri on May 15. Nearby, D. Hunter and A. MacLean ascended a difficult 15,874-foot peak. W. Cowley (leader), R. Hirst, D. Laughton, and A. E. Evennett climbed the east peak (17,500 feet) of Basunag (17,690 feet). In mid June part of the group crossed the still snow-choked Rohtang Pass to the Chandra valley and eventually penetrated the Sissu glacier basin but without making ascents. Mr. Cowley reports the following of this region, which is interesting for a modest expedition where political permission is not difficult: "The whole area south of the Parbati, practically untouched by climbers,

contains many peaks between 17,000 and 20,000 feet which would be well worth climbing, many of the greatest difficulty. Two valleys, the Tanang Khol and the Tundabhuj Khol, appear to give access to the best of the area. A vast icefield, from which rise attractive and difficult peaks of 18,000 to 19,000 feet, lies in the triangle between the Parbati, the Tos-Tichu, and the Dibibokri. This can probably be best approached up snow slopes from the junction of the Tos and Tichu. A side valley from Tos village appears to lead up to the Manikaran spires and interesting peaks between them and Deo Tibba and Indrasau. The vast level icefield from which Indrasau rises can also probably be reached from farther up the Tos, but with little prospect of climbing Indrasau. These three regions offer attractive fields for a small expedition and are easy of access in a normal season."

Nepal

Machapuchare. Machapuchare is a southern outlier of Annapurna III, connected with the main Annapurna chain to the north by a very long and jagged ridge. Its name means "the fish's tail," since it has two summits of almost equal height which give it that appearance. From the north it is snow and ice; from the south it seems like a gigantic Matterhorn: a rock peak. In 1956 Major J. O. M. Roberts reconnoitered the Modi Khola gorge, just west of Machapuchare, and saw a possible line up or over the north ridge, which, though very sharp, connects a North Col (19,500 feet) with the summit (22,958 feet) a mile and a half away. He explored the Annapurna sanctuary of which the mountain forms one edge.

Our 1957 party consisted of Roberts, Charles Wylie, David Cox, Roger Chorley, and myself. We had four Sherpas. We made the seven-day march from Pokhara with 50 coolies. At the village of Ghandrung the villagers tried to hold us up because of the possible anger of the gods who live on Machapuchare. By April 24 we were at our Base Camp (13,000 feet) and on the 29th set up Camp I at 16,000 feet. Here we had a serious set-back. Roger Chorley had to go down with what later turned out to be poliomyelitis and be carried down the valley on the backs of coolies, escorted by Roberts.

Cox and I, on the reconnaissance, made for the North Col but found the other side to consist of overhanging rock and the ridge towards the summit far too steep and sharp. The next day we tried it a little farther along, up a bump christened the "Snow Hump" (20,000 feet), but since it looked no better from there, we went down.

When Chorley's party set out for Pokhara, Cox, Wylie, and I ascended again with the rather forlorn plan of trying to get to or over the ridge just left of the big rock buttress about half way along. This involved climbing steep snow-ice fluting and fixing 900 feet of rope to get a Camp III (20,000 feet) on a line of ice bulges about two thirds of the way up. This operation took time; we were not helped by the weather, which produced snowfall almost every afternoon. Our first Camp II (18,000 feet) was obliterated by hail and had to be moved. From Camp III we continued up snow-ice, fixing 300 more feet of rope, and got to the ridge at 20,700 feet. It was still too steep to follow, but we managed to lower ourselves from a birch stake down 200 feet of rope onto the other side. From here we made a long and sticky traverse horizontally to a little snowfield nestling under the other side of the rock buttress: Camp IV at 20,400 feet. It was difficult getting our three Sherpas and loads over the "Nick" to Camp IV. On May 19, however, we started hopefully for Camp V, thinking that we could now easily reach by a little ice ridge a smooth upper glacier which we could see beyond our immediate foreground. We advanced only 200 yards that day. The other side of the ice ridge, we found, dropped in a frightening sweep straight to the Seti gorge. We should have to lower ourselves again and trust we would hit the tip of the upper glacier visible to the right. We returned to Base to get more rope and make a rope ladder.

On May 30 we were back at Camp IV. We fixed a rope down the "cut-off" and on June 1 Cox and I lowered ourselves down 300 feet of hemp. We had to cut off and attach 20 feet from our climbing rope to hit the glacier tip, working right. We hit the very end before the glacier plunges in chaos to the Seti. Wylie and the Sherpa Tashi stayed at Camp IV to safeguard our return. We pushed on up the glacier and pitched Camp V at about 21,000 feet. It snowed again.

On June 2 we started at 4:15 A.M. The snow on the glacier was sometimes knee-deep. At 7 we reached a shelf under the final steepness: a fluted face of pure ice 900 feet high, but with some streaks of snow in the runnels which could be used. We cut steps to get to the snow; then more ice. At about 9 the weather had changed and it started to snow. At 11, rounding a rib, we found ourselves 100 to 150 feet below the summit; but these feet were of hard polished ice, and the snow was thickening. We decided that the gods must have drawn their line here, so we descended in heavy snow and mist to Camp V. On our return the next day we found that Wylie and Tashi had tunneled *through* the ice ridge, shortening our ascent of it by 25 feet.

We made one more ascent: Fluted Peak (21,800 feet), which stands in the middle of the Sanctuary. Cox and I with three Sherpas got a Camp II at 18,000 feet. Having no time to reconnoiter, the whole climb was an affair of guesswork. We started at 3:15 A.M. on June 13, by moonlight, and managed to connect snow gullies which took us up among the intricacies of the northeast face. A feature of this mountain was the summit, which consisted of a 100-foot ice sérac, its top snow-covered. This was the hardest climbing of the whole expedition.

Machapuchare was the most difficult as well as the most beautiful mountain I have ever been on. Our climb may have been comparable to climbs of the Mustagh Tower; in matters of technique and equipment it owes much to them. But in conception it owes nothing. We went there simply because we had fallen in love with the "Fish's Tail."

WILFRID NOYCE, *Alpine Club*

Jugal Himal. An expedition of the Yorkshire Ramblers Club to the Jugal Himal (23,240 feet) ended in tragedy. On reconnaissance from Camp IV at 20,000 feet, ahead of the other four members of the group, on April 30 the leader Captain Crosby Fox, George Spenceley, and two Sherpas were swept into a crevasse by an avalanche. Only Spenceley remained unburied and survived. The attempt was abandoned.

Annapurna IV. Our honorary member, Dr. R. Charles Evans, with Dennis P. Davis, supported by only four Sherpas, made the second ascent of Annapurna IV (24,688 feet) on May 5, 1957 from a Camp IV at 23,000 feet. Dr. Evans had been with Tilman's party which made a previous attempt in 1950. Japanese expeditions failed in 1952 and 1953. The Germans Steinmetz, Wellenkamp, and Biller made the first ascent in 1955. Bad weather, which dogged them continually throughout the expedition, delayed their attempt on Annapurna II (26,041 feet) until mid-May. They set out over the shoulder of Annapurna IV from the same Camp IV on May 16 with Sherpas and equipment for a fifth camp, which would have been pitched on the long ridge between the two peaks. Their progress was so slow and the drop on the ridge so great that they felt the attempt too risky in the unsettled weather and returned that same day.

Jannu. In September and October of 1957 Guido Magnone, Jean Bouvier, and Pierre Leroux made a quick reconnaissance of three sides of Jannu (25,294 feet), following Yalung, Yamatari, and Jannu glaciers

to their sources. They do not report any obvious route up this peak, which promises to be a difficult problem for the French expedition planned for the spring of 1958.

Pakistan

Broad Peak. The Austrians climbed their fourth of the fourteen "8000ers" last summer, reaching the summit of Broad Peak (26,400 feet), the world's twelfth highest peak, where they used neither high altitude porters nor oxygen. Indeed, although they had porters to help them onto the Baltoro Glacier, they carried all their supplies themselves on the final relay to Base Camp at 16,000 feet beside the Godwin-Austen Glacier, as well as on the mountain itself, and attribute their excellent acclimatization to this fact. On May 13, 1957 they began their reconnaissance up a rib on the western face of Broad Peak. They climbed a snow gully, rock, and then steep snow to Camp I at 19,000 feet. Steep ice, easier snow, and a steep ice-step led to Camp II at 21,000 feet. This camp, which lay at the lower side of a big plateau, was reached on May 21. The climbers were able in the next section to use some of the ropes fixed by the German Herrligkoffer's expedition, which, in 1954, made the only other attempt on the mountain and had failed at 23,600 feet. All four members of the expedition left Camp III at 22,650 feet on May 29 in a summit try, but they reached only the col between the middle and main summits. A storm forced them back to Base Camp until June 7. On June 9 the four, Markus Schmuck (leader), Fritz Wintersteller, Kurt Diemberger, and Hermann Buhl, climbed to the summit of Broad Peak.

While the last two packed supplies off Broad Peak, Schmuck and Wintersteller climbed the highest, though unnamed, summit of the Savoia Group (24,147 feet), which lies between K2 and the Mustagh Tower. In ten hours they crossed ten miles of the Godwin-Austen and Savoia glaciers and climbed up snow slopes on skis to camp at 20,000 feet. On June 19 they ascended in twelve hours the remaining 4000 feet of the southwest face to the summit, first on hard snow and then in deep powder. They were back at Base Camp just 52 hours after their departure.

Diemberger and Buhl left on June 20 to attempt Chogolisa—formerly Bride Peak—(25,110 feet). On June 25 they left Camp I at 20,650 feet, traversed to the beginning of the southwest ridge of Chogolisa and camped in a saddle at 22,000 feet. After a day of storm, on June 27 they climbed to a col at 23,000 feet, where they unroped. Thence they followed the corniced summit-ridge to within 1000 feet of the top,

where at 1 P.M., in cloudy and windy weather, they turned back. On the return Diemberger, who was ahead, felt the cornice settle. Missing Buhl a short while later, he first waited for him and then retraced the tracks until they led off into a break in the cornice. Hermann Buhl, the only man to have climbed two 26,000-foot peaks (Broad Peak and Nanga Parbat) had plunged thousands of feet to his death. His companions later searched in vain for his body.

Haramosh. The aim of the Oxford University South Karakoram Expedition was to explore and survey the approaches to Haramosh (24,270 feet). There had been no previous expeditions to this mountain. The party consisted of Tony Streather (leader), of the Royal Military Academy, Sandhurst, with Oxford graduates and undergraduates Bernard Jillott (originator and organizer of the expedition and deputy leader), John Emery (in charge of health), medical student, Rae Culbert, on scholarship from New Zealand, and Scott Hamilton, on scholarship from U. S. A. The team assembled in Rawalpindi by the 29th of July and flew to Gilgit on the 30th. This start so late in the season was necessary because of term times at Oxford and Sandhurst. Porters were enlisted at Gilgit and the party moved by jeep and on foot to establish camp near the Mani Glacier to the north of Haramosh, a march of only three days. The next two weeks were spent exploring the north and west approaches to the mountain. No possible route was ever found. Attention was then turned to a long ridge running to the summit from the east; this crossed a subsidiary peak of about 22,000 feet. Bad weather at the end of August and in early September slowed up operations, but by the 14th of September four camps had been established and stocked. On the 15th Jillott, Emery, Culbert, and Streather climbed from Camp IV to a point on the ridge near the subsidiary peak. They could see the rest of the route to the summit about four miles away. This looked impassable, due to the broken snow formations and the steepness of the ridge. There was no time to go farther, but our reconnaissance was complete. Just then Jillott and Emery, who were climbing together, got onto a bad piece of snow which avalanched under them. They fell about a thousand feet, but were not seriously hurt. Streather and Culbert spent the next three days and nights trying to rescue them, but in the end Jillott and Emery perished. Culbert and Streather managed to struggle down to Camp III to join Hamilton there. Several days later they reached Base Camp. Culbert had been severely frostbitten and Streather to a lesser extent. They reached Base Camp on the 24th of September and were helped to Gilgit by Hunza porters.

H. R. A. STREATHER, *Alpine Club*

Disteghil Sar. The team consisted of four other British—David Briggs, Dennis Davis, John Cunningham, Keith Warburton—and one Italian, Piero Ghiglione, under my leadership. We went during May, June, and July 1957 to make a reconnaissance of Disteghil Sar (25,868 feet). Base Camp was established on the Kunyang Glacier at 15,000 feet at the foot of the south face of the mountain. After several reconnaissances we found a route on the south side which led to a col west of the summit. The climbing was on a steep face, and our activities were hampered by very bad weather and dangerous snow conditions. The danger of avalanches was great anywhere off the true route, although this was generally protected from them. Even so, our Camp I was eventually destroyed by an avalanche, fortunately when nobody was in it. We made four camps on the mountain and reached just under 22,000 feet. Finally we had to turn back when it became apparent that the weather was continuing to be so bad that the dangerous snow conditions could not improve this year. We had only eight good days in two months. Lack of porters, because there were no men with any experience in that area, meant that all the carrying had to be done by members of the expedition.

ALFRED GREGORY, *Alpine Club*

Masherbrum. We marched 112 miles from Skardu, along the Shyok, up the Hushe valley, and then, on June 15, 1957, to Base Camp on Masherbrum Glacier at the foot of Sérac Glacier. During fine weather we established Camp I (15,500 feet) at the top of the second icefall of Sérac Glacier on June 18, Camp II (17,200 feet) at the top of the third icefall in Sérac Basin the next day, and Camp III (21,000 feet) on the top of the Dome on June 23. The Dome is a rounded shoulder at one end of the cirque overlooking Camp II. After a week of bad weather we established Camp IV (22,000 feet) at the mouth of a basin beneath the southeast face on July 2, Camp V (23,000 feet) on the side of the east ridge on July 6, and Camp VI (24,000 feet) on the southeast face on July 9. Donald Whillans and Geoffrey Smith made a summit attack two days later, but were forced back by dangerous soft snow at about 25,200 feet in the couloir between the higher north (25,660 feet) and the south summits. They retired to a point beneath a sérac at 24,800 feet on the southeast face and bivouacked for the night, with a primus stove and plastic sheet cover, hoping to climb the couloir early next morning. Bad weather, however, forced them to retreat to Camp VI. There these two and their support party, Edward W. Dance and Richard D. Sykes, were pinned in the 2-man tent for the next three days by bad weather. On July 18 Robert O. Downes (deputy leader), Hussein (a

porter), and I arrived at Camp VI as the second assault party. That night Bob developed a terribly bad cough, the first sign of pneumonia. Despite liquids, aureomycin, and air from a Lilo inflater, his respiration got weaker and he died at 6:30 the next morning. That day and the following days were bad with storms. On July 24 I descended with Hussein, who was a very sick and frightened man, to Camp IV. We reached Base Camp on July 27 to break the sad news to the rest of the expedition. The task of bringing Bob down off the mountain was a grim and difficult one.

On August 12 Don and I returned to Camp VI for a third and last attempt for the summit, but were penned in there by bad weather until August 15. Avalanches swept the southeast face and camp would have been safe nowhere else but under the sérac. On August 15 we climbed to the bivouac site of the first assault and made Camp VII. Part way up we had to dig a snow cave as shelter from the powder-snow avalanches until the sun went off the slope, leaving the snow hard and firm. At 2:30 A.M. we left Camp VII and were in the couloir between the twin summits at 25,100 feet by 4 A.M. The sun had only just reached us, but the snow on the steep slab rock was so soft that progress was impossible and any further attempts here would be exceedingly dangerous. We then got onto a deceptively difficult rock buttress on the left side of the couloir. The rock climbing was technically very severe. It took us six or seven hours to climb 200 feet, so at 25,300 feet we took stock of our position. Don had lost his gloves. I had frostbitten fingers and toes. The summit was not worth the risk of a certain bivouac. The ground ahead appeared no easier and, if anything, worse, and so we abseiled down the rocks and descended.

JOSEPH WALMSLEY, *Rucksack Club*

Siachen Glacier Basin. The Imperial College Karakoram Expedition was sponsored and largely financed by the Imperial College of Science, London. The objectives were to fill in blanks on the map of the Siachen Glacier basin and adjacent areas and to conduct geological and glacialogical investigations. The party consisted of Eric E. Shipton (leader), G. Budd (medical officer), the Pakistani surveyor Qureshi, and six member of the College—G. Bratt, K. Miller, P. Grimley, R. Cratchley, B. Amos, C. Gravina. We flew to Skardu on July 23 and left there the next day to reach Goma in the upper Saltoro valley August 1. After leaving Goma on August 3, we headed up the Bilafond Glacier and in four days arrived at the Bilafond Pass, where we split into four components: (1) crossed the Siachen and ascended Terim Sharh Glacier to map the great plateau between that and Rimo Glacier; (2) surveyed Lolofond Glacier and the region to the south;

(3) established a base on the central Siachen; (4) mapped the Bilafond basin and the Gyari and Chulung valleys. The end of August and the first half of September were spent exploring the region around K 12 (24,300 feet), where operations were hampered by very heavy snowfalls. We returned to Skardu on September 30.

ERIC E. SHIPTON

MISCELLANEOUS

Norway

New route on Jaegervasstid. William Briggs and three companions made the first ascent of the southwest ridge of Jaegervasstid, on the Lyngen Peninsula, in June 1957. The climb took 14 hours.

Greenland

Staunings Alps, East Greenland. The Österreichischer Alpenverein sent an expedition to Greenland under the leadership of Hans Gsellmann consisting of the Austrians Hermann Köllensperger, Matthias Koglbauer, Sepp Huber, Gerhard Fuchs, and Kurt Gilg, together with the Swede, Gillis Billing, and the Dane, Dr. Erik Hoff. These mountains rise between the fjords on the east and the inland ice to altitudes of 7000 to 9000 feet at latitudes 72° to 74° N. The Austrians describe them as without exception difficult, and not unlike the Western Alps in nature and difficulty. After landing by plane in Alpe Fjord on July 21, they set up Base Camp nearly on a lateral moraine of Sefström Glacier at 1350 feet. By August 9 they had made the ascents of fourteen mountains, many of them firsts. They had to approach some of them by faltboot. Danes, Norwegians, and especially Swiss have explored this region extensively in the past eight years.

Cape Farewell, South Greenland. A French party—M. and Mme. Jean Syda, Henri Bouchez, Guy Cholet, Henri Leblanc, and Maurice Martin—made six first ascents above the Torsukatak Fjord and two above the Kangikitsok during July and August 1957.

China

Minya Konka. The Chinese report the second ascent of Minya Konka, which was first climbed by our members Terris Moore and the late Richard Burdsall, supported by Arthur B. Emmons III and Jack Young. Six members of the 29-man Chinese expedition, including the leader, Shih Chan-Chun, reached the summit June 13, 1957. It is reported that three of them

died in a fall during the descent. The report brought forth the following comments from Terris Moore in a letter to Henry S. Hall, Jr., dated January 22, 1958:

Only last night I was reading Thoreau's remarks on his climb to the top of Ktaadn: "The tops of mountains are among the unfinished parts of the globe, whither it is a slight insult to the gods to climb and pry into their secrets, and try their effect on our humanity." I said to Katrina: "That's a good sentence, I wish I'd seen that before, back in the days when I occasionally used to write about the tops of mountains. But it's too late now, I'll never be writing about the tops of mountain again." "Oh, yes you will," says she. And, so help me, the very next night, tonight, here I find myself writing about the top of a mountain!

For, in the same mail which brought me your letter today, I also have one from Colin G. Crawford, in Scotland, old friend of Robson days of 1930, enclosing a copy of the October 1957 issue, No. 19, of *People's China,* carrying an article entitled, "The Conquest of Minya Konka." I'm at once mailing it on to Jack Young for his comment and in the meantime send you my observations.

(1) The *People's China* article says nothing about the three climbers being killed which your letter mentions. It merely says on that subject: "Some of the men slipped and rolled down the icy slopes sometimes for hundreds of yards, losing their climbing equipment. Some were unable to stand the ordeal and fell ill. Several members of our team had to forego the honour of scaling the summit of Minya Konka in order to take care of the sick and injured. Of the 17 who started, only six finished the climb."

(2) As to our expedition, they say (exact quote complete with the misspelling in each of our three names): "In 1932 Terence Moore, R. L. Burshall, and A. E. Emmans, three Americans, organized a Minya Konka expedition. They later declared they had reached the mountain top, but this is very doubtful. When we were on top of Minya Konka we looked for traces of their markers, but could not find any. Some old Tibetans living at the foot of the mountain told us that they had once sent some half-frozen Americans back to Yaan on horseback."

It's a snow summit and of course it never occurred to us to try to leave anything, the nearest rock outcrop readily reachable being a thousand feet down the climbing route. In fact *their* own account refers to the summit as "covered with the eternal snows"; what would they expect to find after 25 years? Also I must confess that the last thing we would have expected in 1932 is that by now six charming Communists would be claiming to have been there and "where did we leave our calling cards?"

As to their comment about its being doubtful that we had reached the top, we thoughtfully did provide against just this contingency twenty-five years ago by taking a 360-degree overlapping panorama set of photographs and publishing it—for Communists to overlook—in the January 1934 issue of *The Geographical Review,* in a technical article by Dick "Bur*shall*" (his real name is Burdsall) entitled, "The Altitude and Location of Minya Konka."* The editorial introduction says that "The writer of this article is the leader of the mountaineering team of the All-China Federation of Trade Unions." Along in his article we read interesting details, such as the following: "The snow gradually melted and our progress became slower. We were going up an incline of over 70 degrees [yes, that's what it says] and had to make a foothold at every step we climbed . . . Without the comrades' help we would not have succeeded . . . That day we got up to 17,700 feet above sea level. I gave orders that we should encamp under a cornice of snow" [yes, it says that, too]. When they got on top they "embraced each other, our eyes filled with joyful tears. Lining up we proudly hoisted the five-star national flag on the misty pinnacle. Kuo Teh-tsun tied a red scarf, entrusted to him by a Young Pioneer, on the handle of an ice-axe standing just below the flag. I took a picture of the historic scene."

The same mentality which chose its own way of spelling our names must also have been the one to choose the altitude of the mountain for them. For though Dick Burdsall had been generous in our survey, offering: "24,891 feet, plus or minus 85, which for convenience we round off to 24,900 feet," none of these four possibilities would suit them. Instead, they felt it necessary to choose a five-foot different one of their own "24,895 feet." No doubt the extra five feet is snow that got pushed off the top of the mountain and lost while they were rummaging around on top looking "for traces of markers" of our expedition, but not finding them!

TERRY MOORE

A further note. The February 1958 issue of *Der Bergsteiger,* pp. 198-202, has an excellent account of the Chinese expedition to Minya Konka written by the leader, Shih Chan-Chun. The criticisms so justly made by Terris Moore of the article in *People's China* cannot be made of this account. In *Der Bergsteiger* Shih Chan-Chun states, "Minya Konka was first climbed in 1932 by an American Sikang Expedition. Four American climbers, Richard L. Burdsall, Arthur B. Emmons, Terris Moore and Jack

* See, also; Terris Moore, "The Minya Konka Climb," *AAJ* 1933, 2:1, pp. 1-17; Richard L. Burdsall and Arthur B. Emmons, 3rd., *Men Against the Clouds: The Conquest of Minya Konka,* New York, 1935.

Theodore Young made the attempt and two of them, Burdsall and Moore reached the top." [The names are all correctly spelled.] He goes on to say that their well-illustrated book gives "the very best detailed description of Minya Konka." He describes the slip and the fatal fall of three of the climbers during the descent from the summit. As for the altitude, he gives 7590 meters (24,902 feet), obviously a rounding off of the American altitude to the nearest even 10 meters and only two feet above the other figure. The article in *Der Bergsteiger* appears to be an accurate account of the expedition stated in good taste.—*Editor.*

Club Activities

EDITED BY FREDERICK O. JOHNSON

A.A.C., Cascade Section. Despite 1957's undependable weather in the Northwest, several members completed noteworthy climbs during the summer. In particular, three routes on Mount Rainier were ascended for the first time. A party that included Fred Beckey, Don Claunch, and John Rupley climbed the Mowich Face. Pete Schoening and Dee Molenaar climbed the headwall of the Wilson Glacier. George Senner and party climbed the Kautz Cleaver, which separates Kautz and Success glaciers.

Dick McGowan again managed the guide concession at Mount Rainier. Elvin (Bob) Johnson and Willi Unsoeld summered in the Tetons. Ed LaChapelle has returned to the Northwest for a few months to take charge of the IGY station on Mount Olympus. Many members participated in various rescues in this area, which were directed by the Mountain Rescue Council.

Three Section meetings were held. Early in the year Jürg Marmet and his wife visited us, and he presented his outstanding account of the second ascent of Mount Everest. In the spring Bradford Washburn clearly outlined for our group facts which point to the improbability that Dr. Cook climbed Mount McKinley, which he claimed to have done in 1906. In October over 80 members and guests from Washington and Oregon attended the annual meeting. Dave Collins showed excellent slides of Mount Logan, and Bob Forbes narrated a film on Antarctica. Pete Schoening was named the new chairman of the Cascade Section.

The group lost an old friend and member when Rex Gibson, president of the Alpine Club of Canada, perished on Mount Howson.

GEORGE R. SENNER

A.A.C. Rocky Mountain Section. We met twice during 1957: once to hear Jürg Marmet, the Swiss Everest-climber, and to see his beautiful slides of the Swiss Everest-Lhotse Expedition; and once, in conjunction with the Rocky Mountain Rescue Group, to see Gaston Rébuffat's superb Alpine movies. Both were pleasant and stimulating occasions and resulted in modest profits to our depleted exchequer.

STEPHEN H. HART, *Chairman*

A.A.C., Sierra Nevada Section. Under leadership of Chairman Fred Johnson, Vice-Chairman Raffi Bedayn, and Secretary-Treasurer Howard Parker, the Sierra Nevada Section held four meetings during 1957. Included in the activities were programs by Jürg Marmet on Mount Everest, Brad Washburn on Mount McKinley, and Gil Roberts on Mount Logan. A gathering in May at Lee Stopple's home in the Valley of the Moon, Sonoma County, afforded a fine outdoor atmosphere for dinner and a business meeting, with overnight camping for some.

Local members have been active in climbs in the Tetons, the High Sierra and Yosemite, in South America, and on Antarctic expeditions.

The section now has 65 members.

HOWARD G. PARKER, *Secretary*

Appalachian Mountain Club. During the year the Club's trail system was put into good shape and several shelters were rebuilt. A new shelter was built at Ethan Pond to fill in a gap on the Appalachian Trail, where an overnight provision was needed. The usual program of ice climbing and white-water trips was carried on, as were walking, tramping, and rock climbing excursions. Especial attention was given to activities for the younger members.

Summer trips were run to Hudson Bay, the Canadian Rockies, Idaho's Salmon River, and Hells Canyon on the Snake River. Also there were back-pack trips in Maine and white-water running on the St. John River. The usual camps were operated, and the peripatetic August Camp was held at Abol Pond in the Katahdin area. Two issues of *Appalachia* were published, replete with accounts of mountaineering at home and abroad, and lectures were given on the Andes, Himalayas, Canadian Rockies, Iceland, and round-the-world trips.

K. A. HENDERSON

Colorado Mountain Club. Snowmass Lake in the Elk Mountains near Aspen was the site of the two-weeks outing. This was the Club's sixth outing at Snowmass. Since the first one in 1922 a Snowmass outing has been part of the heritage of every generation of Colorado Mountain Clubbers. The first week was unusually rainy, but gave way to a sunny second week during which more climbing was possible. Three 14,000-foot peaks were climbed (Snowmass, North Maroon, and Capitol), also Hagerman Peak.

The one-week, drive-to-camp outing was held in the Ice Mountain Basin of the Sawatch Range. Since the 1930's, when the first reports of climbs of Ice Mountain (one of the Three Apostles) appeared in *Trail and Timber-*

line, the Club has planned to explore the region more fully. Thirty-three members and four children participated in this outing, which resulted in climbs of three 14,000-foot peaks—Huron, Oxford, and Belford—in addition to Virginia, Winfield, Granite, and Ice Mountain.

In Africa, Allen Auten and the Frank Campbells climbed Mount Kilimanjaro and explored the central part of the Ruwenzori Range. These accomplishments were related in a local program, as were climbs in the northern St. Elias Range, by William E. Davis, the 1950 Mount Everest Reconnaissance, by Dr. Charles T. Houston, the 1956 Swiss Mount Everest Expedition, by Jürg Marmet, and the remarkable film, "Starlight and Storm," by Gaston Rébuffat.

ELWYN A. ARPS, *President*

Chicago Mountaineering Club. During 1957 our organization sponsored 14 local outings, which averaged about 40 people on each occasion. On non-sponsored weekends numerous groups climbed in the various local areas. Several members climbed in the Alps, and others in the mountains of the United States and Canada.

The club's official Western Outing was held in the Lake O'Hara region of British Columbia with 52 members and guests participating. Although none of the major peaks was attained owing to adverse weather, the climbing activities were nevertheless of interest and great benefit to every one.

PAUL STETTNER, *President*

Iowa Mountaineers. The Club completed its eighteenth year of operation with an unusually large number of activities. Approximately 720 different members participated in the indoor and outdoor events sponsored by the Club. Fifteen major week-end outings were scheduled to the Devils Lake climbing areas in Wisconsin and the Mississippi Palisades area in Illinois. Thirteen minor outings were sponsored, consisting of conditioning hikes and training "camp-outs." Eighteen professional adventure-film lectures were sponsored which included programs by the Swiss climber Jürg Marmet and the French guide Gaston Rébuffat.

A journal was published in the Spring covering the recent expeditions of the Club to Mexico, Canada, Alaska and Europe. A "School of Mountaineering Lecture Course" was held and was well attended. Over $1000 worth of basecamp equipment was purchased, which, with existing equipment, now permits the Club to completely outfit its large summer camp. A community campfire tent was designed and constructed, large enough to house 100 persons.

The 19th annual summer outing was held at Maligne Lake, Canada, and attracted 76 persons from six major mountain clubs and 11 states. Thirteen major peaks were ascended and a number of new routes established. An unusually capable array of climbing leaders was present in camp, including AAC members John Ebert and Harold Walton; ACC members Hans Gmoser, William Primak, Ken Jones, Bruno Matteotti, Tony Messner; Colorado Club members Allen Auten and Whitney Borland; Chicago Club members Rod Harris and Felix Hagerman; and Iowa Mountaineer members Dan Doody, John Paup, Warren Pagel.

Many Club members participated in private climbing trips or joined other summer climbing camps. Five members attended the ACC camp in Tonquin Valley, Canada, and seven members joined the Chicago Club camp at Lake O'Hara, Canada. A party consisting of Hans Gmoser, Charles Wilson, Warren Pagel, and Ron Wiessner climbed the South Tower of Mount Eisenhower in Canada; and Wallace Adams, Clair Brown, and Hans Gmoser climbed Mount Robson via the glaciers to the right of Little Robson. Nine members climbed Devils Tower in Wyoming, and 15 members spent a week or longer in the Grand Tetons of Wyoming, climbing the peaks by some of the more difficult routes, such as the East Ridge of the Grand Teton.

JOHN EBERT

Mazamas. The Mazamas, Portland, Oregon, mountaineering club since 1894, carry out a climbing school each spring as a public service as well as for in-service training. Surrounded by snow- and glacier-peaks as well as many rock-climbing areas that beckon the untrained vacationist, the climbing committee hopes in this way to provide safe and enjoyable recreation for many casual climbers as well as the "committed" Alpinists of the Club.

With the increased popularity of climbing, the nationwide publicity of climbing as the Himalayan peaks make the headlines, and the longer leisure hours, the Mazama climbing school has expanded and intensified its offerings. Last spring, 528 aspiring climbers registered to learn how. By the end of the 10-week basic and intermediate course, 11,655 man-hours of instruction had been given. The basic course included lectures on equipment, compass and map, wilderness travel, snow climbing, glacier travel, rock climbing, alpine eating and sleeping, climbing first aid, and dangers. The intermediate lectures covered advanced rock climbing, mountain rescue, leadership, safe mountaineering. Written exams concluded each series. Field trips offered in the basic course were on map and compass, orienteering, snow practice, rock practice, a bivouac practice, and a simulated snow climb. Advanced rock, snow, ice, and rescue practice in new areas were

attended by the intermediate students. These students also were encouraged to help instruct at basic school and to lead a rope on an actual climb during the summer.

Not only do new climbers feel much safer and at ease after the course, but also the "old timers" who attend find that modern techniques have evolved from the research of various other mountaineering groups and that teaching is one of the best ways of learning.

WILLIAM H. OBERTEUFFER

The Mountaineers. Climbing activity in Washington continued to increase during 1957. This fact stressed the importance of educational and safety programs of The Mountaineers. More than 400 took the climbing courses in Seattle, Tacoma, and Everett. An additional 75 took the camping and hiking course that was designed for those who go into the mountains, but who do not climb. Several aspects of the climbing courses were altered. The hard snow and the rescue methods practices were held in late summer. Work continued on the new climbing text. This must be completed soon, because the last copies of the 1948 handbook have been sold. A movie on snow techniques was completed and will be used in the 1958 courses.

Sixty-three experience climbs and six advanced climbs were scheduled. Franz Mohling led a party of advanced climbers on a first ascent up the north ridge of Mount Formidable near Cascade Pass. Non-technical (ropes not required) climbing was very popular. More than 450 participated in 29 non-technical climbs and seven snowshoe trips.

Two two-weeks outings were held this year. The popular and spectacular trip in the proposed Glacier Peak Wilderness Area was repeated on the summer outing. The Campcrafters held their outing in the Canadian Rockies.

Four new routes on Mount Rainier were climbed last summer, which are reported in the climbing notes of this *Journal.* Mountaineers Fred Beckey and Herb Staley then joined John Rupley, Dr. Thomas Hornbein, Harry King, and Wes Grande to make a first ascent on Mount Huntington in Alaska. A first ascent up the east ridge of Mount Logan, Yukon Territory, was made by Mountaineer Dave Collins with Cecil Ouellette, Yakima, Washington, and Californians Gil Roberts, Kermith Ross, and Don Monk. (See article.)

The year 1957 will be remembered as a bad year for accidents. Eighteen accidents, with six fatalities, occurred in the State of Washington. The figures are eloquent and underscore again that it is impossible to put enough emphasis on safety.

PAUL W. WISEMAN, *President*

Southwestern Mountaineers. During 1957, the Southwestern Mountaineers carried out a program of intensive rock climbing in the Organ Mountains of New Mexico. While most of the major peaks had been climbed already, many new routes were pioneered and some unclimbed pinnacles ascended. Among the more noteworthy ascents was the climb of the Tiger Fang, an inconspicuous pinnacle on the northeast wall of the Organ Needles. This climb was made by Harry Davis and Tom McCalla. A second ascent of the North Tower of Shiprock, May 28, by Harry Earle, Bernard Topp, and Harry Davis was marred by the death of Topp when a rappel point in the Great Bowl failed.

Because of the ruggedness of southwestern terrain, rescue operations in the Organs have been somewhat difficult, especially when a stretcher must be carried to the scene of an accident. Working with Army authorities at White Sands Proving Grounds, Club members, led by President Dave Waddington, designed a three-part stretcher, whose sections may be used as packboards for carrying equipment to the scene of an accident. Easily assembled, the stretcher is then used to carry the victim out of the mountains. The stretcher was built by the Army and is now stored at the White Sands Dispensary for use in an emergency or for training purposes.

Primarily a rock-climbing group in the past, the Southwestern Mountaineers is enlarging the scope of its program to provide hiking, caving, and other activities for its members. The Club invites participation in its programs by members of other mountaineering clubs.

RONALD A. HAHN

Wisconsin Hoofer Mountaineers. Hoofer activities for 1957 resembled those of previous years, both locally and in terms of summer trips. During the winter months we thrived as ski enthusiasts and held several meetings to review the accomplishments of the past summer and plan for the summer ahead. Spring climbing at Devils Lake served to limber up those who took the annual trip to the Tetons. In August a group visited the vicinity of Gannett Peak in the Wind River Range, new country for the Hoofers. Poor weather sent several climbers from the Wind River to Colorado, where ascents were made, including Longs Peak by the East Face.

SUSAN F. WARD

Dartmouth Mountaineering Club. The Club activities for the year included all the perennial club events: conducting week-day rock-climbing classes for the Physical Education Department during the fall and spring; carrying out rock-climbing trips nearly every weekend during the ice-free

seasons to the classic climbing areas in the Northeast; several winter ascents, including some ski-mountaineering; the traditional ascent of the Winter Carnival center-of-campus giant ice sculpture, which unfortunately overhung on all sides; infiltrating between closely spaced "no trespassing" signs in order to climb a magnificent cliff owned by the stubbornest farmer in New England; publishing our *Journal;* sponsoring several outstanding lectures; and, of course, holding a few "colorful" social events.

In addition to the usual activities, two innovations have entered into our way of life. The first was the establishment here last fall, by the Army, of a Mountain and Cold Weather Training Program, for Army ROTC students as an extra-curricular activity. The Army supplies all equipment, including ropes, hardware, and skis, and excellent instruction in both rock- and snow-mountaineering. There are at present 50 students enrolled in the program with plans for expansion to 100 next year. Coöperation between the Club and the Army personnel has been exceptionally good, and this program has done much to boost interest in climbing among Dartmouth students.

Our second and most recent innovation is the conducting of a unique winter program during the winter of 1957-58. This program consists of one night of lecture and one afternoon of practice a week, plus several weekend trips to Mount Washington and Mount Katahdin. While the course begins with the instruction in basic technique, the focus of the program will be on expeditionary training, in which we simulate as much as possible the problems encountered by an expedition.

During the summer of 1957 DMC members climbed in various places, including the Alps and major ranges in Canada and the U. S. The Club sponsored an expedition to the Bugaboos in British Columbia. The expedition members, Sam Silverstein, Sterling Neale, George Fisher, and Charles Plummer, packed into the Bugaboo Group of the Purcell Range in late August. After using a day of good weather for a practice climb, they were forced by bad weather to wait in vain for two weeks in the hope of good climbing weather.

In the Tetons Barry Corbet and Jake Breitenbach, who were working as guides, made the first ascent of the North Ridge of Teewinot. Also, in the Tetons, Sam Silverstein, Sterling Neale, and Charles Plummer put in a variation on the Lower Exum Ridge of the Grand Teton on September 4. The variation avoids traversing onto the west face of the ridge after the second step and instead goes straight up the crest of the ridge.

CHARLES C. PLUMMER, *President*

Harvard Mountaineering Club. Last summer was an extremely active one for the HMC, with members climbing in various parts of Europe and North and South America. The most ambitious venture was the Andean expedition, which is described elsewhere in this *Journal.*

The fifth biennial climbing camp was held in the Northern Selkirks. Despite prevailing dismal weather, many ascents were made, and the camp succeeded in introducing a number of members to "big" mountains.

After the climbing camp, Gordon Benner, Pete Everett, and Randy Ornstein were among those who went to the Tetons. Leo Slaggie and Dave Toland attempted Mount Sir Donald with Bryan Michener. This party was turned back by poor weather, but made subsequent ascents of the Exum Ridge of the Grand Teton and Longs Peak via Alexander's Chimney. After a summer working in the Tetons, Bob Page climbed Devils Tower on his way home to the east.

John Post, George Millikan, and Nile Albright were among those in Europe. Bad weather was a problem, but Albright managed ascents of the Matterhorn, Weisshorn, Monte Rosa, and Mont Blanc.

Locally, the Club conducted its usual rock climbs in New Hampshire and the Shawangunks and engaged in a great deal of ice climbing in Huntington Ravine. The Boott Spur cabin was repainted and improved generally. To meet Forest Service requirements, the cabin is now closed from mid-March until October.

MICHAEL WORTIS, *President*

Stanford Alpine Club. The Club pursued a varied program during the past year, mixing local practice climbs with larger-scale ventures into the Sierra and beyond. The first day of spring vacation found three members at Glacier Lodge preparing for an attempted winter ascent of Middle Palisade. Although a high camp was established at 12,000 feet, the summit face proved to be covered with verglas, and threatening weather forced the group off the mountain short of the top. Following the usual Yosemite Valley rock-climbing weekends during spring quarter, a trip was organized into the Minarets after school let out. It was attended by nearly a dozen climbers and was accompanied by beautiful weather. It promises to become an annual event. Summer trips to major climbing areas in the Cascades, Sierras, Tetons, and Canada were highlighted by a two-week expedition into the nearly unexplored Battle Range, which adjoins the southern boundary of the Selkirks. The four-man party was hampered by the weather, as were nearly all climbers in Canada last summer, but they made a difficult ascent of an unnamed 11,000-foot peak.

The first practice climbs of fall quarter saw the beginning of intensive instruction for new people, who at times numbered 40 or more. Before being allowed to climb with the Club in Yosemite, prospective members are required to attend three practice climbs and pass a qualification test which includes proficiency in knot tying, belaying, rappelling, and basic climbing techniques. Winter activities include an emphasis on skiing and winter mountaineering, along with rock climbing at Pinnacles National Monument. Ski tours are organized to the various Sierra huts, which provide an easy day in and out and a thoroughly enjoyable weekend.

MICHAEL ROBERTS, *President*

Yale Mountaineering Club. The activities of the YMC during 1957 were carried out largely in familiar areas. Members visited Mount Washington in the spring for ice climbing. In March, Eric Cheney, Pete Lipman, Charlie Sawyer, Chad Dilley, and Charlie Ehlert, with Don Claunch, of the AAC drove to New Mexico for rock climbing in the mountains near White Sands and an unsuccessful try at Shiprock. In July, Jim Derby, Steve Porter, Andy MacMahon, Jim Darby, and Clint Brooks climbed in Canada, preluding the trip with climbs in Yosemite and on Rainier. The Canadian peaks climbed were Mounts Athabaska, Babel, Edith Cavell, Victoria, and a try at Eisenhower. In August, Pete Lipman made several climbs in the Tetons, including the East Ridge of the Grand, the South Ridge of Nez Percé, and the Durrance and Southwest ridges on Symmetry Spire. And in August another group of five, Kent Keller, Phil Ritterbush, Charlie and Pren Sawyer, and Charlie Ehlert converged in Rocky Mountain Park. Keller and Ritterbush had been there most of the summer, and the climbs numbered in the fifties, including the Arapaho Peaks, the East Face of Longs Peak, Mount Richthofen, Haydens Spire, and a traverse of Arrowhead and McHenrys Peaks, climbing a new buttress on the south side of Arrowhead. Jim Hyne spent the summer on Ellesmere Island at an IGY camp, making a dozen first ascents. In Lima, Ted Achilles joined a German Andean party, an account of which is given in the climbing notes of this *Journal.*

The annual fall training program was held on Sleeping Giant in Mount Carmel State Park, near New Haven, the cliff there being well suited to teaching most aspects of rock technique. Climbing at the Giant was popular during the fall, as many as 50 climbers turning out, and continued until local authorities leveled a threat of arrest at three law-abiding climbers. Other trips extended to more distant Connecticut cliffs, the Shawangunks, the White Mountains, and Mount Kathadin.

CHARLES EHLERT, *President*

Sierra Club of California. Undoubtedly the year 1957 produced one of the most impressive rock climbs ever to be completed in Yosemite Valley, and one which certainly ranks with any climb completed or attempted in the world. Three southern California members, Jerry Gallwas, Royal Robbins, and Mike Sherrick completed a five-day ascent of the vertical north face of Half Dome, which rises a full 2000 feet from the base of the wall. This climb, although certainly one of the most ambitious ever attempted in Yosemite, was carried out in perfect safety during the excellent summer weather. Between 250 and 300 pitons were placed, as well as 20 expansion bolts. This climb is even more amazing when one considers that at one time it was thought that the summit of Half Dome would never be reached by any route. Since that time three separate routes have been established, leaving only the south face untouched.

With the face of Half Dome on the list of "has been done," the ironworkers turned elsewhere in the valley. This time the shear 2000-foot south wall of El Capitan became the challenge. So far several parties have pushed to a point about 1000 feet up, using a considerable number of bolts and pitons. Climbing ended in November, but will be resumed in the spring of 1958.

Other climbing was done by club members in Peru, the Tetons, Canada, Washington, and, of course, throughout California.

The club also published Leigh Ortenburger's "Climber's Guide to the Grand Tetons" during 1957.

RICHARD C. HOUSTON, *Chairman,*
Mountaineering Committee

Spokane Mountaineers. Growing interest in skiing activity and active recruiting of climbing school students swelled club membership to 90 in 1957. A well-planned series of evening classes and field practice sessions was conducted by the climbing committee. Safety, proper equipment and its use, dynamic belay, and climbing rhythm were stressed. At the final session, Fred Beckey presented his Lhotse "Himalayan Adventure"—scenes of sublime Nepal were a superb contrast to the mundane bowline practice.

During the summer the fine safety record of the club was maintained in numerous sorties. A second attempt was needed on September 1 to complete a fine ice climb on volcanic Glacier Peak (10,436 feet). Don Bergman and Jack Miller used the southeast cleaver above Chocolate Glacier after the long eastern approach.

An official club climb of Rainier via Gibraltar succeeded on August 17 after several years of weather setbacks. In their first excursion to the Cash-

mere Crags, members' eyes were opened to the fine rock and fancy pinnacles of "Beckey-land." This time we climbed Razorback and Comet spires on the 8000-foot Temple Ridge.

For the fifth successive year, members successfully stormed Chimney Rock (7136 feet), above Priest Lake, Idaho. In the Inland Empire region, Chimney Rock has as fierce a reputation as Devil's Tower and Shiprock have nationally. It is spectacular to the lake dwellers, and offers, so far, only one route leading through a series of slabs and chimneys—nearly two hours of class "4½" enjoyment. The surrounding area strikingly resembles the Yosemite region. The accompanying picture shows the unrelenting sweep of slab. (Plate 26.)

Intensive interest and development on Mount Spokane this year have shown the value of the mountaineer ski cabin and slope. The Bavarian Ski School, with two fine instructors from Garmisch, leased partial use of our facilities for the season.

WILLIAM C. FIX, *President*

Book Reviews

EDITED BY HARRIET T. PARSONS

The Mountain World 1956/57. Edited for the Swiss Foundation for Alpine Research by Othmar Gurtner and Marcel Kurz; English version edited by Malcolm Barnes. New York: Harper & Brothers, 1957. 200 pages; ills. Price $6.00.

The current issue of *The Mountain World* records the world's most successful period of high mountain exploration and ascent so far. This single issue describes the first ascents of Kangchenjunga, Makalu, and Lhotse, and the second ascents of Everest and Kamet. The summit of Makalu, in fact, was reached on three successive days by a total of nine climbers. No wonder Jean Franco refers to Makalu as "The Happy Mountain." But he pays homage to the expeditions before him. "Their lessons were our opportunity, their sufferings were our debt." And as he says, ". . . oxygen was for us as much a part of our equipment as a good pair of mitts on Mont Blanc."

The Mountain World 1956/57 records not only ascents of the world's highest peaks, but mountain endeavors of other kinds in widely separated areas. For instance, Arnold Heim writes of the Virungas Volcanoes in tropical Africa, Wilhelm Kick in separate articles discusses glacial movements in the Karakoram and place names in Baltistan, and Bradford Washburn writes definitively of Mount McKinley. The latter article, magnificently illustrated, is certainly the outstanding work in this issue. Well written and compact, this concise account tells the history of past climbing on the mountain, analyzes the weather, air support and snow conditions, and pictures in detail great new routes that will some day be made on this vast 20,000-foot peak that lies 35 degrees of latitude north of Everest. Magnificent double-plate photographs and a section of Washburn's stunning relief map of Mount McKinley are included. This analysis of Mount McKinley sets a standard that promises to be unequalled for many years.

The Mountain World is written for a world-wide audience and American, German, and Swiss editions are published simultaneously. Despite cavalier tendencies with the proofreading, this publication annually provides readers throughout the world with a clear and beautiful record of research and high adventure.

ROBERT H. BATES

The First Ascent of Mont Blanc, by T. Graham Brown and Sir Gavin de Beer, with foreword by Sir John Hunt. London: Oxford University Press, 1957. 490 pages; ills. Price 70s.

Published on the occasion of the Centenary of the Alpine Club, this is an expensive book, but a necessary luxury for those interested in Alpine history, particularly in the events relating to the attempts on Mont Blanc and the successful effort of 1786. The collaboration of a great expert on the mountain (author of *Brenva* and former editor of *AJ*) with a noted historical authority bespeaks the integrity of its content.

The attainment of Mont Blanc on August 8, 1786 broke the magic barrier defending the hitherto almost ignored world of snow. Not only the highest summit of the Alps, this peak became symbolic as the portal to mountain adventure; but its clouded history, particularly in connection with the controversy developing around Paccard and Balmat, fills many printed pages. Only in recent years has the truth become known and Paccard placed in his rightful position of honor. Whymper was the first to see this: the village doctor almost forgotten as the result of several detractors. First there was Balmat himself, greedy for gold, then vainglorious Bourrit, jealous of any effort more fortunate than his own, and finally romancing Dumas, who swung public attention to Balmat. Others such as C. E. Mathews, Dr. Dübi, Freshfield, Montagnier, and E. H. Stevens have since striven to set the facts aright, and it has now fallen to Graham Brown and de Beer to throw further light on the problem.

But the new and sad revelation of the present volume is that de Saussure, the one man whom one thought of as putting truth before all, a neutralist if not openly pro-Paccard, now turns up in the camp of the derogators. De Saussure was well aware of Paccard's initiative; he must have known of the expedition to the Tacul basin, and certainly of the doctor's attempt on the Aiguille de Gôuter. Instead of due acknowledgment in *Voyages* (vol. II), he repeated Bourrit's emphasis and omissions, knowing they were false. When Paccard included his barometric readings on the Aiguille du Gôuter in his letter of September 25, 1785, to de Saussare, he came into scientific competition with the professor, and the reaction of the latter was one of resentment. De Saussare could. with a stroke of his pen, have killed the myth of Balmat's preeminence; but he did not, and thereby failed in his duty as an impartial scientist by supporting Bourrit's falsehoods.

The second part of the book presents in their original form numerous documents, some hitherto unpublished, others in which the text was incomplete or erroneous. The illustrations include many plates in color, reproduced from old prints, portraits of Paccard and Balmat, various photos of

Mont Blanc, and the original sketches made by von Gersdorf at Chamonix on the day of the first ascent.

J. MONROE THORINGTON

Premiers voyages au Mont-Blanc, par. H.-B. de Saussure, M.-T. Bourrit, et leurs contemporains, selected by Daniel May. Paris: Club des Libraires by André Wahl. Price 1950 fr.

In this, the 18th volume of a series *Découverte de la Terre,* an introduction of 39 pages precedes an anthology extracted from the works of de Saussure, Bourrit, and Deluc. The material is grouped under various headings: Chamonix, the Buet, The Tour of Mont Blanc (exploration and conquest of the mountain), and Col du Géant. While it brings under one cover portions of several narratives, all familiar to students of Alpine history, the book adds little to the knowledge of readers who have the original volumes available.

After the visit of Windham and Pococke to Chamonix in 1741, Mont Blanc came to be regarded much as Everest was a century and more afterward. The early confusion between the Buet and Mont Blanc has its parallel in mistaken identity of Himalayan peaks in modern days; while the caravans of guides and porters, impedimenta and provisions lists from the time of de Saussare to Albert Smith reflect in lesser scale the make-up of early expeditions to the Karakoram.

J. MONROE THORINGTON

Snowdon Biography, by Geoffrey Winthrop Young, Geoffrey Sutton, and Wilfrid Noyce. London: J. M. Dent & Sons Ltd., 1957, 194 pages; 24 ills.; end-paper map. Price $3.64.

To the American who has climbed in the Welsh mountains, or who has read extensively in the literature of that lovely region, these three essays will provide unusual enjoyment. But most of us who do not fit into either of these two classes will find this little book rather dull. The reader needs an intimate knowledge of the cliffs and crags or, in lieu of that, a deep interest in the men and women climbers whose names parade through the pages.

The first two essays are a chronicle of rock climbing in Wales. This gives little scope for the fine writing for which the authors are so well known. Place names unpronounceable to us abound and the famous climbing figures file past too speedily for the reader here to gain any interest in them. Prior familiarity with the area or the mountaineers is needed.

The third essay, *The Writer in Snowdonia,* traces the literature of the region from the Welsh poets to Wordsworth and on to the rock-climbing

guide books. A student of Carr and Lister's "The Mountains of Snowdonia," 1925, will find this a readable supplement, bringing up to date the second edition (1948) of that major work.

BRADLEY B. GILMAN

The Everest-Lhotse Adventure, by Albert Eggler. Translated by Hugh Merrick. New York: Harper & Brothers, 1957. 222 pages; ills.; maps. Price $4.50.

For the members of the American Alpine Club the Swiss expedition that in 1956 climbed to the highest yet unclimbed summit, Lhotse, the world's fourth peak, and twice reached the top of Mount Everest has a special interest. Many of us were fortunate enough to see the magnificent pictures and hear the thrilling story as told by our fellow member, Jürg Marmet. Even without this personal interest, Albert Eggler's fascinating and well written *The Everest-Lhotse Adventure* would be highly rewarding.

The account starts with a description of how the climbing team, and a real team it turned out to be, was picked and trained and of what they used in the way of food and equipment. It next carries us across India and Nepal to Namche Bazar and Base Camp. We feel the anguish the Swiss felt when first Luchsinger, then Pasang Dawa Lama, and finally Diehl fell seriously ill. We ascend the Khumbu icefall and the Western Cwm with the climbers, racing desperately to beat the oncoming monsoon. With them we live in the high camps and pack supplies, gasping for oxygen. We struggle up the Lhotse couloir and stand with Luchsinger and Reiss on its wind-swept summit. We ascend Mount Everest itself, first with Marmet and Schmied, then a second time with Reist and von Gunten. We get to know intimately those marvelous, cheerful, child-like and hard-working Sherpas, whose qualities the Swiss have always been so quick to appreciate.

This is a thrilling book of a thrilling and well-run expedition. It has not suffered by its translation from German to English and reads easily and well. The photographs were excellent to begin with and have been well reproduced. This is an outstanding addition to the long list of titles that have recounted the history of the world's highest mountain.

H. ADAMS CARTER

Cho Oyu; by Favor of the Gods, by Herbert Tichy. Translated from the German by Basil Creighton. Foreword by Sir John Hunt. London: Methuen & Co., 1957. 196 pages; ills.; maps. Price 25s.

In the evergrowing shelves of mountaineering books there is a small select group of volumes that will never exceed fourteen in number. These are

books written about the first ascents of the 8000-meter peaks. Dr. Tichy has written a book with the same high standards that he used in conducting his expedition. The party was small; three Austrians and eleven Sherpas. At fourteen men this is by far the smallest party to be successful on an 8000-meter peak. Although the climb was short (four camps above base) and of mild technical difficulty, the story does not lack excitement. With Tichy's hands frozen and the wind blowing tents apart, along comes another expedition to compete for the summit, and a first-class melodrama results.

The first third of the book deals with preparations and a light account of the journey from Katmandu to Base Camp above Namche Bazar. Then they come to grips with Cho Oyu. There is little to come to grips with, however, for in a few days they are high up the mountain beyond the ice wall which stopped Eric Shipton's party in 1952. In an incredibly short time Tichy and three Sherpas establish Camp IV at 22,900 feet, within reach of the summit. Then a violent storm strikes, and if the reader overlooks that losing gloves is a rather elementary error, and that good tents don't come apart in 80-mph winds, it's pretty exciting. With the assault party in full retreat, along comes the Swiss expedition wanting the Austrians to get on with the climb or get off of the mountain. This tense moment is saved when Pasang Dawa Lama (who is the real hero of the story) gets the word in Namche Bazar and heads for the summit under forced draft. He joins the others at Camp III on the morning of the second day, and with Tichy and Jochler stands on the summit of Cho Oyu less than 36 hours after leaving Namche Bazar. After such a climb there is little left to do but go home, and Tichy fills out his book with the story of Pasang's wedding (his second), a drunken affair that leaves the reader wondering where all the chang came from. Certainly this is one of the better books on 8000-meter ascents to be published. Both the writing and photographs are excellent.

RICHARD K. IRVIN

Makalu, by Jean Franco. Translated from the French by Denise Morin. London: Jonathan Cape, 1957. 256 pages; ills.; maps. Price 25s.

The ascent of Makalu in 1955, as with all the 8000-meter peaks, was a superb achievement accomplished by a group of highly competent mountaineers. Jean Franco tells their story in narrative form, with occasional use of dialogue, without overworking the popular theme of camp-to-camp routine spiced with dashes of sensation. He asks us at the start ". . . to sit down at our table, unshaven like the rest of us, to hear the songs of the Sherpas and the wind whistling over the moraine, and to climb up slowly

through a fascinating world of high mountains until he stands with us upon the summit, with three-quarters of the Asian continent at his feet."

His descriptions of the approach march through Nepal are interesting. We are introduced to various Nepalese, who happen upon the expedition on its way up along the Arun River. He shows great warmth of feeling for the Sherpas, who help bring the party toward the summit of Makalu. The ascent of the mountain went quite smoothly, which speaks well for their organization and planning. Rarely does more than one party reach the summit of such a mountain, yet, with the blessing of good weather, the entire climbing team, including a few Sherpas, reached the summit during a 72-hour period.

Makalu does not show the craftsmanship that is exhibited in *Annapurna.* In the latter book, Herzog created strong personalities through the continued use of dialogue and conveyed a vivid realism to the story that is not easy to attain. Franco uses this technique to a lesser degree, but it makes his story very readable.

ALLEN STECK

In Highest Nepal: Our Life Among the Sherpas, by Norman Hardie. London: Allen and Unwin, 1957. 191 pages; ills.; maps. Price 21s.

This book is the account of living with Sherpas in the high Nepalese valleys of Solo Khumbu, just south of Mount Everest. The author, a New Zealander, is one of the four members of the British Kangchenjunga Expedition who reached the summit in May 1955. Afterwards he left the climbing party at Base Camp and walked with three Sherpa companions to the village of Khumjung, near Namche Bazar. Joined later by his wife, Enid, and by A. J. Macdonald, he spent five months among these remarkable Mongoloid people who have provided the sinews of transport for most of the great Himalayan climbs. He and Macdonald also conducted a survey to untangle the maze of ridges and valleys south of Mount Chamlang.

The book is a straightforward, readable, day-by-day account of the author's experiences among the Sherpas, and he describes their customs, habits, beliefs, and economy. That he capitulated completely to his hosts and their way of life there isn't a doubt. To them he attributes the high qualities of good nature, gentleness, generosity, loyalty, and independence, with hardly a mention of any human failings whatever. In fact, of his departure he wrote: "I was not quite sure why I was leaving Khumjung, and wondered if anywhere else in the world could ever be to me so much a home."

However, such an admittedly simple, unadorned account tends to be two-dimensional. It seems to lack a depth and penetration that might have uncovered the inner spark which animates this interesting and unique segment of the human family. In other words, we hear the Sherpas tick, but the mechanism that makes them do so remains somewhat of a mystery. Still, Hardie's enthusiasm is catching and his story is very much worthwhile for those who are interested in the human aspect of the world's greatest mountain range.

The book is well illustrated by the author and his wife, and there are two diagrams, but the pair of outline maps are somewhat sketchy for those not generally familiar with the region.

WELDON F. HEALD

Far, Far the Mountain Peak, by John Masters. New York: The Viking Press, 1957. 471 pages. Price $5.00.

A climber reading a novel about mountaineering finds himself considering it from two angles—as a story, and as a picture of the sport.

This book tells of a man driven by a craving for self-conquest and power over others, and by an insatiable ambition, who finds his special field of action in high mountaineering. As a story, it offers unusual and interesting personal relationships, and plenty of melodramatic action. Critics have been enthusiastic about its literary value—"A magnificent novel," "With warmth, color and authority," etc., etc. Readers have put it on the bestseller lists.

The author, who is not himself a climber, begins with a foreward thanking Hedley, Harrer, Ruttledge and Longstaff for their expert advice. With their help he has avoided any conspicuous technical mistakes. But there are points one cannot fail to notice.

Anyone who has seen how the mind typically works at high altitudes is rather surprised by those long, logical, penetrating discussions and meditations about personal philosophies and emotional problems, that take place at 23,000 feet, and up!

More important is the fundamental attitude toward mountains. The plot itself forces the author to emphasize climbing for personal aggrandizement. Although the chief character, who dominates the book, is represented as becoming one of the world's leading climbers, and although his European and Himalayan ascents manage to be wonderfully authentic and vivid, he has a strange lack. Nowhere do we see him showing any liking for mountains in themselves, or any enjoyment of their presence. Never does he even seem conscious of their existence, as actual physical

entities. Through most of the book they are to him just background-scenery—beautiful scenery, generally—for his climbing activities. And when finally he learns the meaning of compassion and humility and human warmth, he decides that "mountaineering consists of people, and only incidentally of mountains." Yet he calls himself "a mountaineer." Personally, I found this a readable and exciting novel, but very definitely *not* the story of a mountaineer.

ELIZABETH KNOWLTON

The Ascent of Manaslu in Photographs. The Japanese expeditions of 1952 to 1956, by Takayoshi Yoda. Tokio: The Maiinichi Newspapers. 186 photographs, 9 in color. Price Yen 1,000. (Charles E. Tuttle, Rutland, Vt. $5.00.)

Seldom has a mountaineering picture book contained so many excellent and delightful photographs as this volume which tells the story in pictures of the five Japanese expeditions to Manaslu in the Nepal Himalaya. The fifth expedition culminated in success on May 9, 1956, when the Sherpa Gyaltsen (who attained the summit of Makalu with the 1955 French expedition) and Toshio Imanishi planted the Rising Sun and the flag of Nepal on Manaslu's 26,657-foot summit. Two days later, on May 11, Kiichiro Kato and Minoru Higeta also struggled to the summit. Thus, after one reconnaissance and three failures, the Japanese added an eight-thousander to their climbing laurels.

Leaving Katmandu in Nepal early in March, it took 18 days for the expedition members to march to the foot of Manaslu. The photographs depict the route into the mountains as well as the ascent.

Although the text is in Japanese, a descriptive list of the photographs is given in English. Remember that in reading a Japanese book, you start at the right and work to the left.

FREDA B. WALBRECHT

Visit to the Sherpas, by Jennifer Bourdillon. London: Collins, 1956. 256 pages; ills. Price 16s.

The author is the wife of Tom Bourdillon, the Everest climber. While he was on one of the British reconnaissance expeditions, Mrs. Bourdillon spent the time visiting the Sherpas, that cheerful and energetic race who live in the foothills of the Himalayas and who have been so indispensable to the success of all climbing expeditions.

Her account of her life with them is a fascinating one. She was the first white woman ever to live entirely alone among them, and though

in many ways she found them to be a primitive people, they were so friendly and hospitable, so interested in her and in helping her, that it was a most rewarding experience. Their country, of course, is scenically one of the most spectacular in the world, and their villages are almost all at elevations over 10,000 feet. Their lives are full of hardships and are governed by the climate and the seasons, by the stony and barren hillsides from which it is so difficult to gain a living—in spite of which they are among the happiest people in the world. Mrs. Bourdillon writes of all this in the most interesting and refreshing way. She describes their daily lives, their religion and festivals, their curiosity about her, and their loyalty to whomever they are serving. She lived as one of them, sharing their meager food, sleeping on the floors of their huts with the entire family, and frequently the goats and pigs too! She traveled from village to village with the help of Sherpa porters and so came to have a very thorough knowledge and appreciation of Sola Khumbu and its remarkable people, so simple and hardworking, so cheerful and gay. A very worthwhile book.

HELEN LECONTE

I'll Climb Everest Alone, by Dennis Roberts. London: Robert Hale Ltd., 1957. 158 pages; ills.; maps. Price 15s.

This is the story of Captain Maurice Wilson, M.C., who undertook to climb Mount Everest alone on the basis of faith and fasting, and who ultimately perished at the foot of the North Col of the mountain at 21,500 feet, in May 1934. The point of view of the author is shown in the foreword, in which he says: "Call it madness, call it anything you like, but is there not an element of grandeur in the thought of this young man actuated perhaps by a flame of idealism, a desire to express something, to expand consciousness, to escape from fleshly shackles, to rise above all earthly considerations, setting out alone to scale the world's highest mountain, which four elaborate expeditions of experienced mountaineers had already failed to climb?" (p. 12)

Wilson's point of view is expressed in one of the last entries in his diary: "Weren't we told that faith would move mountains? If I have faith enough I *know* that I can climb Mount Everest." (p. 125)

In a sense, Wilson demonstrated the power of faith in that, without previous flying experience, he learned to fly, and flew a Moth Biplane solo from London to North Italy, no mean achievement in 1933. He then crossed Sikkim disguised as a Lama, went through Tibet, and ultimately attained a height of 21,500 feet on the East Rongbuk Glacier.

The author had access to Wilson's diaries and letters, and the book is very factual. Wilson was one of those who was so affected by the horrors of the First World War that he never got back into the ordinary stream of life. He finally reached the point where he believed that if a man fasts—and fasts properly—he at last reaches a stage when his physical body and his soul are one, and he lies close to death but completely drained of all bodily and spiritual ill. On this basis he believed that he could conquer Everest alone.

OSCAR R. HOUSTON

Un Uomo va Sui Monti, by Giorgio Brunner. Bologna: Edizione Alfa, 1957. 499 pages; ills.; drawings. Price 1500 lire.

This is a long and unusual book about mountains by a man who cares for them passionately. Giorgio Brunner is an engineer from Trieste; he is a husband and the father of two children, but after reading this book one is left with the impression that he is a lover of mountains first and foremost. He says himself that all his life has been lived actually and figuratively against a background of peaks.

If you want technical talk about climbing techniques, racy descriptions of expeditions, gossip about mountaineers, this book is not for you. If your approach to the high hills is a mystical one, if you have been guilty of solitary climbing, if you are a lover of mountain scenery in all its moods and aspects, you will feel sympathy for this lonely enthusiast. (However, this is rather a book to dip into, not to read straight through!)

Brunner started his climbing career as a small boy when he accomplished startling ascents and traverses on a large pile of old carpets in the attic. As he grew older, his passion found no encouragement from his family, and none of his friends cared for climbing, so he went off alone to his beloved Julian Alps, walking thirty and forty miles a day, taking incredible risks in his ignorance, learning everything the hard way—a great gangling boy who was set to be a mountaineer. He survived it all; he began to make mountain friends here and there: the guide Bernhard Biner in Zermatt, the celebrated rock climber Emilio Comici. He went off on organized expeditions, but still from time to time he would run away from the world up a solitary peak. Comici recognized his ability and shared his enthusiasm, and the two men became responsible for a splendid list of new winter and summer ascents in the Julian Alps and the Dolomites.

The first part of this book is the history of the making of a mountaineer, illustrated by Brunner's diaries, until the moment when he meets his

wife, a good climber in her own right. (His courtship of Massimina appears to be the only time in his life when he was content to amble up little hills!) The second part of the story tells of trips to the Andes, the Pyrenees, the Mont Blanc district, the Bernese Oberland, and Zermatt. Always Brunner returns happily to the Julian Alps, to Triglav and Montasch and Bela Pec, and he knows and loves every part of their wild and stern beauty.

In the mechanical and over-practical world of today, this book is refreshing. "My supreme happiness is on the solitary summit of a high mountain," says Giorgio Brunner at the end of his book. He takes us there with him, and we are the richer for it.

URSULA CORNING

Amadou Alpiniste, by Alexis Peiry. Paris: Désclée de Brouwer. 36 pages; 16 photographs by Suzi Pilet. Price $1.72.

This charming book for children tells the story of little Amadou, whose greatest friend, a seasoned rock climber, is killed by lightning during an ascent of the Roche Percée in the little-known rocky range of the Castlosen in Switzerland. Amadou makes a vow to commemorate his friend by putting a cross with an inscription on the spot where his friend died. His climbing apprenticeship, his hair-raising adventures on the mountain, admirably illustrated by Suzi Pilet, the simplicity and the poetic atmosphere of this little idyll, should win many young friends for the mountains. There is much sound advice for incipient climbers, and the various routes on the mountain are excellently explained. This is a most refreshing little book.

URSULA CORNING

A Selection of some 900 British and Irish Mountain Tops. Compiled and arranged by William McKnight Docharty. Edinburgh: Darien Press Ltd., 1954. 124 pages: frontispiece, 9 panoramic photographs, mountain lists, explanatory texts. (Privately printed.)

William McKnight Docharty has achieved in his book something which many of us who know a little, and love what we know, of British hills, hoped that one day might be done. He has listed the hills of from 2500 to 3000 feet above sea level, in Scotland, Ireland, Wales, and England. (The countries are in order of their mountaineering importance, whether one measures by height or numbers.)

Sir Hugh Munro started, late last century, when he tabulated the 3000-feet-or-over peaks in Scotland, something that Docharty has now continued. It is still a feat, which few have achieved, to climb all the

276 "Munros" in Scotland. To climb all the British "Dochartie," which Docharty's listed 2500-footers may well come to be termed, would be a far greater feat, though an attractive one to undertake.

Let no one despise the British mountains because they are "small" from a height above sea level point of view. It is unlikely that any mountaineer would, because every range has something special of its own, and mountain comparisons are generally inadequate. British mountaineering, however, derives much of its interest from the combination of a temperate climate with the northerly latitudes in which Britain lies.

The Gulf Stream may prevent Britain from being an icebound land like Greenland, but, when one climbs up 2000 feet or more in Britain, one moves right into a sub-arctic region. Take a look at the equivalent latitude in North America or Siberia, to see why this is true. In summer one can enjoy wonderful dry and warm rock-climbing, but in a flash the weather can change, and at 2000 feet snow can fall at any time of year. In winter and spring especially, real mountaineering alertness is essential on any British hill above that elevation. In these seasons a seemingly mild day can quickly change to the white hell of an arctic blizzard.

Docharty is a true mountaineer and mountain lover. If Fate has led him through a miraculous escape from being a complete cripple to accept limits to his mountaineering capacities, not only do his limitations exceed the physical aspirations of many men of his age, but they have led him to an appreciation, examination, and painstaking tabulation of interesting hills in the British Isles which might otherwise have missed the notice of many. He has thereby made a great contribution to mountaineering.

His book is not only a stimulus to further exploration of British mountains, it is a guide that any mountaineer from any country who finds himself in Britain, would highly value. Thousands of people may in consequence enjoy healthful pleasure they might otherwise have missed. It is to be hoped that many, Americans especially, may with the aid of Docharty's lists, find and learn to love the Britain that lies above 2000 feet.

MALCOLM DOUGLAS-HAMILTON

L'Homme et Le Mont Blanc, by Etienne Giudetti. Paris: Hachette, 1957. 197 pages; panorama. Price 750 fr.

In this account of Chamonix, its valley and Mont Blanc, the text is largely given over to the story of the mountain through the time of Saussure's ascent. Preliminary sections deal with visits to the valley as early as the

15th and 16th centuries, and it is pointed out that the supremacy of Mont Blanc was unrecognized because of the great heights attributed to peaks along such passes as the Mont Cenis and St. Gotthard, on which great rivers rose. One is struck by the amazingly accurate figure of 4808 m. which Saussure obtained by barometric measurement on the summit of Mont Blanc in 1787. It is also pointed out that, almost to the time of Whymper, the Mont Blanc massif had individual names for only a few peaks. Now there are more than 400 named points above 3000 m.

Subsequent climbing is compressed in a final 20-page chapter. There are three appended tables on climbing, in the first of which (to 1871) it is indicated that English climbers accounted for more than 50 percent of ascents, while our countrymen occupy third place, following France.

The errors and shortcomings of this book, which cannot compare in scope with Payot's *Au Royaume du Mont Blanc,* and is insecurely bound, are the subject of a critical review by L. Seylaz in *Die Alpen,* October 1957.

J. MONROE THORINGTON

Alpinisme Sovietque, by A. Tcherepov. Translated from the Russian into French by Paul Sulfourt. Paris: Amiot-Dumont, 1957.

This book's twofold uniqueness atones for its colorless style. Not only does it illustrate Soviet mountaineering philosophy, but the setting chosen for this portrayal is to western mountaineers one of the least known on earth. This is the Tian Shan, in the heart of Asia. The center of the range, the Khan Tengri massif, was in 1937 and 1938 the object of two strongly backed expeditions led by Professor A. A. Letavet, and the account of these makes up the core of the book.

The first, in 1937, made three major first ascents and at the same time discovered a very high and previously unknown peak which became the object of the 1938 expedition. The latter made what was thought to be an ascent of this new peak, until a wartime aerial survey proved that an adjacent and higher point on the ridge was not only the true summit (appropriately named Victory Peak in 1945), but also the second highest point (7439 meters) in the Soviet Union. Such was the unexplored nature of the Tian Shan until recent years.

The climbs appear to have been of a high order and well executed, under conditions made difficult by the combination of Himalayan altitudes and proximity to the cold of Siberia. Temperatures of —30° F., glaciers extending into the valleys far below the altitude of a Himalayan snow-line, and the necessity of attacking the highest peak from the north side, all add credit to the climbers' successes.

While the story of these successes reflects Russian qualities of courage and determination—and at times philosophical reflection—the Communist influence is always evident. Soviet mountaineering is no end in itself: throughout, the author justifies the climbing efforts as primarily for the sake of science. Mass calisthenics are portrayed against a backdrop of peaks, and Stalin's portrait is deposited in a summit cairn. A newly climbed mountain is named "Peak of the Twentieth Anniversary of Soviet Communist Youth." Little mention is made of human doubts or problems. In no case does the author admit a dilemma or indulge in that candid introspection necessary for its communication to the reader. There is self-criticisms of a sort—"Yes, we made a mistake. We'll have to correct it"—but in this case an apology for the ascent of a major peak in weather so bad that scientific findings were unobtainable, leading the author to complain, "Il n'en reste plus que l'aspect sportif"! Nevertheless, a few episodes are encouraging reminders that even in a Communist country mountaineering can retain some of the aspects which to westerners differentiate a sport from a campaign. A self-denying rescue of an injured companion, occasional references to non-material benefits of the climbs, camaraderie, and even humor, add spice to an otherwise unexciting fare.

ROBERT H. T. DODSON

Montagne Retrouvée, by Gilbert Toulouse. Paris: Arthaud, 1957. 212 pages.

"Alpinism had a double origin" this author points out. Most of the members of our club he would place in his first category: city folks bitten by the sporting bug, some with a goal little higher than that of escaping the boredom of their dull world. He obviously prefers his second breed (typified by Carrel, Croz, Maquignaz, and Rey): the lone native of the Alpine valley, carrying on a "dialogue with Nature" as he joins in that "divine game" of assaulting the high peaks. This book is devoted to describing the environment of such a mountain native, his villages and their legends and superstitions, his background of cowherd or hardy smuggler. One fairly smells the stale cheese and manure.

While the reader will find no feats of mountaineering on these pages, he can gain an increased appreciation for the life to be observed outside of his Alpine resort hotel or on the walk to his climbing cabin.

ROGER S. WHITNEY

Vom Berge Verschlungen in Bücher bewahrt, by Helmut Presser. Bern: Schweizerischen Gutenberg Museums, 1957. 27 pages; ills. Price Sw. fr. 4.50.

On August 25 (old style), 1618, the village of Plurs, near Chiavenna in the Bregaglia valley, was destroyed by a landslide from Monte Conto, with loss of more than 2000 lives, only a few houses being left standing. The Thirty Years War had just begun, and obscured the lesser catastrophe. The present small volume gives the historical and pictorial facts, which the author likens to a 17th century Pompeii, an incorrect analogy, since no volcanic activity was involved. Other related incidents in Alpine areas are better known: the landslide of Mont Granier (1248) in Dauphiny, recorded in the *Nürnberg Chronicle,* and the fall of the Rossberg in 1806, which covered the Swiss village of Goldau. Plurs had become wealthy from the silk industry and from the sale of a soft stone, quarried for manufacture of pots, which alone brought the inhabitants an annual income of 60,000 ducats. Their mountain was so cut into during 1600 years that, in a sense, the villagers had dug their own graves. The gardens and palaces of rich Milanese now lie in forgotten ruins below ten meters of debris, surmounted by groves of chestnut trees.

The book contains facsimile documents and copies of old engravings, as well as a bibliography.

J. MONROE THORINGTON

Alpstein, by Walter Zuberbuhler. Teufen (Appenzell): Arthur Nigli Ltd., 1956. 104 pages; 74 photographs by Herbert Maeder, end-paper map. Price Sw. fr. 18.80.

The canton of Appenzell, including the district around the Alpstein, forms the characteristic countryside of N. E. Switzerland. A study of its people forms the introduction to this attractive picture book, the text being in German, with English translation. The photography is exceptionally fine.

J. M. T.

Mit Glücklichen Augen, by Walter Pause. (Third edition) München: Bruckmann, 1957. 151 pages; ills. in color. Price 8.50 DM.

These "Notes of a romantic mountaineer" have made many friends since their first edition appeared in 1948. Pause takes us on easy hikes and difficult climbs, on foot and on skis, through the Bavarian and Austrian mountains near his home town of Munich. He has a delightful sense of humor; the chapters dealing with his early mountain experiences as a boy are most amusing. The color illustrations represent reproductions of paintings by famous painters of mountain scenery, each one supplied with a special comment by the author. For those who would like to follow

Pause's steps there is a brief description of his trips in guide form at the end of the book.

HORST VON HENNIG

To Kiss High Heaven: Nanda Devi, by J. J. Languepin. Translated from the French by Mervyn Savill. London: William Kimber, 1956. 199 pages; 9 ills.

This is an unusual mountaineering book for several reasons: it is emotional as only the French seem able to write; there is little description of actual technical climbing which dulls so many climbing books—only 76 of the 198 pages are devoted to the actual ascent. The people, the country and the mountains are sensitively, often poetically described, and the dialogue is well done, giving an air of vitality to the book.

Traverses of peaks and arêtes are often grander than summit climbs. The French determined in 1951 to climb 25,645-foot Nanda Devi (first climbed in 1936), cross the mile-long ridge, and descend over East Nanda Devi (24,390 feet). This is a heroic plan more because of altitude, uncertainty of Himalayan weather, and length of ridge than because of technical problems. Duplat, expedition leader, was so obsessed by the grandeur of the plan that some of his party believed he would rather die in the attempt than fail. The attempt took place in June 1951 and Duplat and Vignes were last seen close to the summit of Nanda Devi. No trace of them was found, the presumption being that they perished from exhaustion on the long climb or fell from the ridge. The expedition was well conceived, congenial, and well run. Far too little time, however, was spent acclimatizing (Duplat spent only *five* days from Base Camp to accident, and the others only ten). Too little attention was paid to the experiences of their predecessors, and the porter caravan was unnecessarily large and complex. Despite these minor shortcomings, it was a good expedition, unusual because it ended amicably.

The book has been translated clumsily, and the original French idiom is often obscure. There are many avoidable mis-spellings and a good many mis-statements of fact which could easily have been avoided by a little research. A good map and technical appendix would have added greatly to the book's value to climbers. It is, nevertheless, a very readable book, lively, sensitive, vivid, and refreshingly different from most mountaineering records.

CHARLES S. HOUSTON

The West Face, by Guido Magnone; with a preface by Maurice Herzog. Translated by J. F. Burke. London: Museum Press, 1955. 166 pages; 15 photographs, 3 diagrams. Price 15s.

Guido Magnone and his companions have once again illustrated that man has still an unquenchable desire to explore and conquer the unknown. By using special techniques (whether one thinks they are ethical or not), the most difficult, and at times frightening, climbing was accomplished. I do not think the author has to go as far as he does in attempting to justify his motives for climbing. Men climb for different reasons and let's let it go at that. Needless to say, the organization and determination of the group that climbed the West Face of the Dru was of the highest order. A very readable book.

JULES M. EICHORN

Mischief In Patagonia, by H. W. Tilman. Cambridge University Press, 1957. 185 pages; 16 pages of photographs; 2 maps. Price $3.75.

In *Mischief In Patagonia,* Mr. Tilman has sandwiched his account of crossing the Patagonian Ice Cap, in December 1955 and January 1956, from Peel Inlet to Lake Argentino and back between those of his voyages in the English pilot cutter, *Mischief,* from England through the Straits of Magellan to Peel Inlet and the return trip completing the circumnavigation of South America, thence back to England. The account of the Ice Cap crossing appears in brief but pertinent part in *AAJ* 1957.

Mr. Tilman, Major E. H. Marriott an experienced English climber, and Mr. Jorge Quinteros a Chilean climber, made up the ice cap party, leaving three others to act as ship keepers—no mean task as events proved —while the climbing party was on its trip. The climbers ascended the Calvo Glacier snout from a small beach on the northerly side of Calvo Fjord, thence up the glacier to Cervantes Ridge and down East Bismarck Glacier to the westerly side of Lake Argentino. Contrary to expectation, the party had a fair share of good weather, and despite Mr. Quinteros' frost-bitten feet, made the sixty-odd mile trip in the scheduled six weeks. While the ice cap crossing takes a mere thirty pages, it is clear that Mr. Tilman's new-found love of the sea has not dampened his ardor for first class mountaineering exploration.

The account of the voyages out from England and return suggest the author is a venturesome and resourceful, if not skillful, yachtman, whose spirit is much in the tradition of Lord Dufferin (*Letters From High Latitudes*), and perhaps more, of Harry Pidgeon (*Around the World Single Handed*), who also took to the sea in his middle years.

Mr. Tilman's lucid and amusing style of writing is refreshing in an age when the fashion in accounts tends to be purely factual. Frequent authoritative references to preceding voyages and to the historical backgrounds of many sailor's phrases which are commonly and indiscriminately used makes the book pleasant fare for the seagoing bibliophile. It would be rash to say that Mr. Tilman has produced his best book in *Mischief in Patagonia,* but it would seem reasonable to say that the adventure was worthy of the performer and that its chronicler has lost none of his cunning in its telling.

It is interesting that a climber in what now may seem to some to be the older tradition should add a new trick to his bag. Perhaps part of the answer is to be found in Mr. Tilman's statement that "the mountaineer usually accepts the challenge on his own terms, whereas once at sea the sailor has no say in the matter and in consequence may suffer more often the salutary and humbling emotion of fear."

It is exhilarating to read of an adventure such as this in which a relish for experiencing strong human emotion is more important than precisely measuring the degree of difference between a meticulously made plan and its consummation.

JOHN H. ROSS

A Dictionary of Mountaineering, by R. G. Collomb. Glasgow and London: Blackie & Son Ltd., 1957. 175 pages; 52 sketches. Price 12s 6d.

This is an interesting attempt at a dictionary of mountaineering terms. It is, however, by no means complete or authoritative. French and German terms are given, but not exhaustively, yet Italian, Spanish, and other languages are largely ignored. It is written from the standpoint of the English reader of current English climbing literature, with considerable attention to foreign importations such as "abseil," which no American or English writer of the older school would be guilty of using, except perhaps *in extremis* as a synonym. There appears to be a marked partiality towards words of foreign origins, most of which would rarely, if ever, be found in English literature.

There is no attempt at giving pronunciation; a lack very apparent in words of Gaelic or Cymric origin. There are various errors, principally omissions of certain meanings of words or alternate usages, but the insertion of C.A.C. as the initials of the Alpine Club of Canada will immediately strike any American or Canadian reader. There is a tendency to define climbing terms by examples taken from British rock climbs of the places where such technique is customarily used. This practice appears to this reviewer as completely defeating the object of the book, for anyone

unfamiliar with the term would hardly be expected to be familiar with the climb used as an example. In fact it would seem that there is too much of an attempt to include a climbing manual in the definition of terms, although the author specifically disclaims such an objective.

The author is unfamiliar with American usage, but his definitions of British usage, particularly that of the younger rock climber, will be helpful to the American reader. The book cannot be compared to Underhill's or Schmidkunz' work, but is an interesting addition.

K. A. HENDERSON

A Century of Mountaineering. 1857-1957, by Arnold Lunn. London: George Allen & Unwin Ltd., 1957. 263 pages; 8 plates in color; 16 plates from photographs. Price 25 s.

This handsome volume, uniform in size and style with "The Mountain World" series, was sent to all members of the Alpine Club as a "Centenary Tribute" to the Alpine Club from the Swiss Foundation for Alpine Research. In a preface, Othmar Gunther, of the Foundation, says: "In our attempt to achieve a real understanding of mountaineering epochs and trends we should be guided by two prominent beacons: mountain and man." In the search for a writer, he continues, the Foundation decided upon one "who could combine the factual approach of the historian and the personal interpretation of the essayist." The choice of Arnold Lunn was a happy one, for he is an accomplished writer and his experience with mountains and the men who seek them has been life-long. As a youth he rejoiced in mountains, from the precincts of Oxford he led his fellow-students to them, and in maturity he has kept abreast of all that goes on in Britain and the Alps. Moreover, it has been his privilege to know many of the pioneers about whom he writes. We should expect to find, therefore, a book full of life and ideas rather than a mere chronology; and such indeed is the case. Throughout the book he seems to say: "I am writing from my own point of view, and when I have finished someone else may go on and tell the story in another way." If this is not a history, it is full of the material out of which histories may be written. The book is built around people and the people come to life.

As soon as we get into the body of the book we begin to meet people. First come the British pioneers: Forbes, Albert Smith, Tyndall, Alfred Wills, Kennedy, the Mathews clan, and John Ball—men of the Golden Age; then, Whymper, Leslie Stephen, Mummery, and Coolidge, of the Silver Age; later, "Four Great Mountain Explorers"—Freshfield, the Duke of the Abruzzi, Vittorio Sella, and Martin Conway. There is a chapter on

"The Guides of the Golden Age." Geoffrey Winthrop Young, Schuster, Amery, and others come later. There are many anecdotes, including Lunn's own experiences with the Alpine Club. Foreign climbers are introduced, rather more than in most British books; even a few ladies are admitted to the book, if not to the A.C. There is a chapter on "Ski and Winter Mountaineering"—here the author speaks with more than ordinary authority, for he has been president of the Ski Club of Great Britain and editor of the *British Ski Year Book*. In "The Iron Age" there is a lively discussion of the ethics of artificial aid, in which Sir Arnold shows himself to be rather more tolerant of the "moderns" than are some of his contemporaries.

It is hardly to be expected of one man that he should be able to cover the whole world of mountaineering with equal authority. It would have been better perhaps if the author had frankly conceded this. It would have been better, for instance, to say nothing rather than treat the Canadian Rockies, the Andes, and New Zealand in a total of three pages. It would certainly have been better if he had left out the page and a half on "The North American Ranges" (meaning Alaska), for in them is found not only error of omission (How can one speak of Mount McKinley and not mention Herschel Parker and Belmore Browne?), but there is an unsightly blemish. The latter is not entirely the author's contribution, although he should have checked a little before placing sole reliance on Ullman's *The Age of Mountaineering*. The chapter that Lunn calls "excellent" is very unreliable, and in the account of the "Sourdough" climb of 1910 positively slanderous. A reading of reviews in the *Alpine Journal* (Vol. 53, May 1942, pp. 271-3; and Vol. 61, November 1956, pp. 426-8) would have given warning. However, let us not end on this note, for there is so much that is good in this unique "tribute" from one mountaineering organization to another that small defects should not distract attention from its merits.

FRANCIS P. FARQUHAR

Proceedings of the Club

ANNUAL REPORT OF THE SECRETARY FOR THE YEAR 1957

In writing this second report as secretary, my primary reaction has been one of increasing respect for those officers and directors of recent years who have coped with growing functions and administrative detail. The Council has met four times in the past year with an average attendance of ten. These meetings last at least a full day. We are indeed grateful to those who must leave their communities to attend; some of the directors have traveled 3000 miles from home.

In the past year the Council elected 25 Active members, we lost 6 members by death, 10 by resignation, and 2 were dropped. There are now 483 Active and 12 Honorary members—4 of the latter are also Active members.

Since the report at the last annual meeting, we have lost by death Active members William A. Degenhardt, Edwin H. Ohl, Nathaniel L. Goodrich, Donald Ely, Richard N. Meyer, E. Rex Gibson. Our deepest sympathy has been expressed to our fellow club, the Alpine Club of Canada, in the loss of their president and our own member, Major E. Rex Gibson. Rex had long been the close friend of many of us.

This afternoon and tonight you will hear directly from participants about some of the activities of members during the past season. Only one American seems to have climbed in the Himalayas the past season, this being with the unfortunate Oxford expedition on Haramosh. Until the last three weeks it seemed improbable that American climbers would be in the Himalaya the coming season except perhaps as they might be attached to European expeditions. One application sponsored by the American Alpine Club was refused, the other, after a wait of about a year, was granted. Our pleasure in this successful application is tempered by the realization that at this late date it is questionable if an American expedition can be adequately financed. It is much more difficult to organize an American expedition because of greater distance, higher costs, and public misunderstanding due to the lack in this country of a long climbing tradition. When permissions cannot be secured within a reasonable time or are kept pending indefinitely it becomes next to impossible. The time element and the factor of money expended, perhaps to no avail, are likely to discourage any but the extremely enthusiastic.

So far as can be determined at this time, the accident rate of the past season in North America was not unduly high. Profoundly, though, we must regret several fatal accidents to highly experienced climbers. Mountain climbing cannot be made completely safe; it is the overcoming of objective dangers that constitutes one of its attractions. However, the all-time high record of deaths in the Alps and one of the worst years in Himalayan fatalities gives every reason for concern. We urge all climbing groups to maintain, even to increase, their emphasis on safety training.

One of the greatest pleasures at this meeting is to salute the father of all modern mountain clubs. I refer, of course, to the Alpine Club which celebrated its Centenary in London November 6. We are very happy that a representative group of our members could attend. We extend our thanks to the Alpine Club for its example during the last hundred years and we express the expectation that it will continue to be guide and mentor to all who love the mountains.

LAWRENCE G. COVENEY, *Secretary*

ANNUAL MEETING AND DINNER

Minutes of the 55th Annual Meeting of the American Alpine Club, held at the Club House, New York, December 7, 1957. The meeting was called to order by President Oberlin at 2:15 P.M. with 73 members present. The minutes of the meeting of December 1, 1956 were approved as published in the 1957 *Journal*. The secretary read his report, which was approved. The treasurer referred to his report, as circulated, and made explanatory comments. It was voted to approve the treasurer's report and the investment changes made by the Finance Committee.

Captain William D. Hackett presented a trophy for the Club House, consisting of a mounted collection of stones taken from the highest points on the continents of North America, South America, Europe, Africa, and Australia. No other person is known to have attained the summits of all five continents.

The chairman of the House Committee called attention to the availability of surplus pictures and other material for sale for the benefit of the club. In reply to a question from the floor about better arrangement of the wall space, it was explained that several committees were involved and that there were differences of opinion about the best artistic and functional arrangement, but that the matter was under continuing consideration.

William S. Child presented, on behalf of the Conservation Committee, certain recommended changes in the conservation policy adopted at the previous annual meeting. He asked that these changes, which had been

endorsed by the directors at the morning meeting, receive approval, which was granted. The editor outlined plans for the 1958 *A.A.J.* Francis Cary, for the Library Committee, stated that Mrs. Sarsousky had been engaged to bring up to date the cataloguing of books and journals. George Bell announced that the government of Pakistan had granted to N. B. Clinch permission for an expedition to Hidden Peak. Brief reports were made by Dr. Ferris for the Safty Committee, and by Robert Bates on mountain and cold weather training.

The president spoke of the very great pleasure he and several other members of the club had had at the Centennial celebration of the Alpine Club in London last November. He described some of the more impressive features of the occasion. Francis Farquhar expressed the pride that he and other American Alpine Club members had felt in the choice of our president for the response to the toast, "The Guests."

The president informed the meeting that the assistant secretary, Miss Helene Fleck, would leave her post to be married in January. He expressed the great appreciation of the officers and directors for her excellent service and their best wishes for her happiness.

Adams Carter, reporting for the Nominating Committee, offered the following nominations for councilors-at-large for terms ending 1960: Dr. William S. Child, John Sanford Humphreys, Thomas A. Mutch. As no other nominations were made from the floor, the three nominees were declared elected. The meeting was adjourned at 3:05 P.M.

Lectures. A capacity audience of members and guests enjoyed the afternoon program. Craig Merrihue showed excellent pictures and gave an equally good narrative of the Harvard Andean Expedition. In the absence of Archibald MacIntosh, who was unable to appear as scheduled, John D. Graham showed the entire film of his traverses of the Matterhorn. The afternoon program closed with an unscheduled feature contributed by Peter Schoening—a ten-minute film, "Mountains Don't Care," prepared under the auspices of the Mountain Rescue Council, Seattle.

The Dinner. There were many favorable comments on the facilities furnished by the Henry Hudson Hotel for the social hour and dinner, attended by 117 members and guests. The after-dinner program began with "Northern Selkirks 1957," presented by John S. Humphreys. The 20 minutes allotted to him seemed all too short for his beautiful pictures and his original and effective treatment coupled with his occasional humorous touches. We were fortunate in having David Collins with us to tell of the outstanding American climb of the year, "Mount Logan by the East Ridge." All members of the party are to be congratulated for completing a new route

up one of the most formidable of North American mountains. Dave's commentary on the excellent pictures was direct and impersonal, but of compelling interest. The program ended at 10:25 P. M., allowing time for more visiting with friends, a feature that seemed to be very much appreciated.

LAWRENCE G. COVENEY, *Secretary*

REPORT OF THE CONSERVATION COMMITTEE

The policy of this committee as officially approved at the 1956 annual meeting was considered by some of the club's members to be too broad in certain respects, exposing the club to the possible risk of compromising its tax-free status. The whole matter was reconsidered at the Council meetings of February 9, May 11, and October 12. The following changes resulted from these discussions and were approved by vote at the last annual meeting:

Revisions to replace No. 5 and No. 6 as listed in the 1957 *Journal*—

5. Conservation measures of national importance, in which the club's name might be used with constructive effect, should be studied by the committee and referred to Council with a recommendation as to action. Use of the club's name will be only by authorization of Council.
6. The club is authorized to maintain membership in or otherwise co-operate with organizations conducting scientific, educational, and literary studies and programs in furtherance of the club's interest in the reservation of high-mountain wilderness, such as the Natural Resources Council of America; however, the Council will determine the extent of its own participation in cooperative effort.

Function to be added—

8. The committee will maintain liaison with the National Park Service and the U. S. Forest Service.

During the past year the chairman asked David R. Brower to advise the committee on matters of interest to the club in the West Coast area, Harold F. Walton in the Rocky Mountain area, and George E. Goldthwaite in the East. The club has become a member organization of the Natural Resources Council, probably the most effective national association in conservation work today; two members of the committee attended the meeting in Washington, D. C., in March, and one member, the meeting in Sarona, Wisconsin, last October. It is hoped that the committee may be of increased service to the club in conservation matters during 1958.

Respectfully submitted,

WILLIAM S. CHILD, *Chairman*

M.E.LINCK

CLUB PUBLICATIONS

THE AMERICAN ALPINE JOURNAL, annually from 1929, illustrated. Price and availability upon request. Current issue, $3 ($2 to members).

A CLIMBER'S GUIDE TO THE ROCKY MOUNTAINS OF CANADA, by Howard Palmer and J. Monroe Thorington, revised edition by Thorington, 1953. This guide covers all peaks of interest to climbers with routes and map references. $4 ($3 to members).

A CLIMBER'S GUIDE TO THE INTERIOR RANGES OF BRITISH COLUMBIA, by J. Monroe Thorington. Covers the Selkirk, Purcell (including Bugaboos), Monashee, and Cariboo ranges. Third Edition, 1955, $3 ($2.50 to members).

A CLIMBER'S GUIDE TO THE CASCADE AND OLYMPIC MOUNTAINS OF WASHINGTON, by Fred Beckey. Contains 1,000 routes on 500 peaks, with photographs, maps, and index. $4 ($3 to members). Supplement on new routes available separately. 50 cents.

A SURVEY OF EARLY AMERICAN ASCENTS IN THE ALPS IN THE NINETEENTH CENTURY, by J. Monroe Thorington. Illustrated. $2 ($1.50 to members).

WHERE THE CLOUDS CAN GO: THE AUTOBIOGRAPHY OF CONRAD KAIN, edited by J. Monroe Thorington. A reprint (1954) of the book originally published by the club in 1935. $5.

ACCIDENTS IN AMERICAN MOUNTAINEERING. Annual report of the Safety Committee of the American Alpine Club. 25 cents.

HANDBOOK OF AMERICAN MOUNTAINEERING, by Kenneth A. Henderson. 1942 ($1.75 to members).

The American Alpine Club, 113 East 90th Street, New York 28, N. Y.

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